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CHOLOGRAFIN*

R. HASTINGS-JAMES, M.D. and
A. J. GLAZEBROOK, M.D.,
St. Boniface, Man.

THE PURPOSE of this paper is to discuss our experiences with the new medium Cholografin after nine months' trial. We describe some alterations of the published technique which we think are important. We believe that the indications for the use of this compound are very limited.

Cholografin was first introduced into Germany some two years ago under the name Biligrafin. It is the disodium salt of N,N'-adipyl-bis-(3-amino-2, 4, 6, triiodo)-benzoic acid, and it contains 64.32% of iodine; the iodine is so firmly bound to the molecule that it seems unlikely that iodine sensitivity needs to be taken into consideration in using the compound. The 20 c.c. ampoules contain a 20% aqueous solution of the crystalline substance. After intravenous injection it is excreted through the liver into the biliary passages and is eliminated in the faeces. The amount in the bile rises rapidly and reaches a concentration some thirty to one hundred times greater than that in the blood, according to Huber and Stossel,¹ this is sufficiently great to give satisfactory opacification of the larger biliary passages in most cases, so that the test closely parallels the well-known intravenous pyelogram examination. The high concentration in the bile is thought to be brought about by active functioning of the liver cells and to be quite independent of the gallbladder, and it is thus especially valuable in patients who have had the gallbladder removed. Very little reabsorption from the intestine occurs, so that recirculation is not seen. About 10% of the material is excreted through the kidneys. This percentage may become greater if the route through the liver is for any reason difficult.

These details about the early work on the new substance and the first clinical trials may be found in papers by Gaebel and Teschendorf² and by Nissen and Horstmannshoff³ among others. Berk *et al.*⁴ claimed good results in 30 patients, and stated that the quality of the shadows seen was at least as good as that obtained with the newer oral contrast media. They found that radio-translucent calculi showed up well and noticed that the bile ducts were usually visualized ten minutes after injection, but always after twenty minutes, and that they remained visible for from one to four hours. They found no better opacification after the injection of morphine, the inhalation of amyl nitrite, or the intraduodenal instillation of 0.1 N HCl, and that poor results correlated well with evidence of liver damage as supplied by liver function tests. Milanese *et al.*⁵ used neostigmine to try to close the sphincter of Oddi and so get better opacification of the duct.

Senèque *et al.*⁶ suggested that the use of Cholografin was indicated only in post-cholecystectomy cases or cases of congenital absence of the gallbladder, or when the gallbladder emptied badly; they did not regard it as a test displacing classic cholecystography. They were fearful of employing it in people with iodine intolerance and they recommended very slow injection, drop by drop. Nadal and Vigneau⁷ also found the substance of most use in the post-cholecystectomy syndrome.

PREPARATION OF THE PATIENT

At first we employed the rather elaborate routine as used for oral cholangiography, but there seems to be no advantage in prolonged fasting and we are not convinced that purgation and enemata beforehand are necessary. Our present practice is to allow toast and black coffee for breakfast and then have the patient attend the department at 9.30 a.m. for the injection to be given. We prefer the subject to be ambulant as then gas shadows tend to be less troublesome.

*From the Departments of Radiology and Gastroenterology, St. Boniface Hospital, St. Boniface, Man.

PRELIMINARY TESTS

We were careful in the beginning to test the patients for sensitivity, using both the intradermal and the conjunctival methods, but as three of the five patients first seen gave positive reactions to the intradermal test and negative reactions to the conjunctival tests, we decided to abandon skin testing. Only one patient in the series exhibited a positive conjunctival reaction, but showed no toxic reactions at all when the substance was given intravenously. It seems doubtful, therefore, whether preliminary testing has any value except possibly from the medico-legal point of view. Also it seems clear from the published reports that the substance is practically non-toxic. The manufacturers mention vomiting of central origin as a possible side-effect. Nemours-August and Barag⁸ found that one in 200 patients vomits. Ward⁹ describes a case of sudden collapse after the injection of Cholografin, but the patient was quickly resuscitated and suffered no after-effects. Accordingly, we also gave up the extreme caution which requires that ten minutes be taken for the injection. Such a long time is an ordeal for the patient, wastes the time of the doctor, and probably results in a poorer concentration of the opaque material in the bile ducts than would occur if a more rapid rate was used. We believe that no harm will result if only three minutes is taken for the injection; it may be possible and preferable to give it even more quickly. We use 40 c.c. as a routine except in very small subjects.

ROENTGENOLOGICAL TECHNIQUE

This has been fully described in numerous publications, including those mentioned above, and we have little to add except in one important particular. At first we followed the manufacturer's instructions closely as regards timing of the films, taking the first ten minutes after the termination of the injection. In one man visualization was not obtained at ten minutes as the material had flowed from the common duct into the small bowel. On a second occasion the man was given an injection of morphine gr. $\frac{1}{4}$ (16 mg.) just before examination, but again the ten-minute film was too late, the morphine failing to hold up the substance in the common bile duct. He was therefore examined for a third time, and films immediately and seven minutes after injection were exposed instead of the ten-minute film re-

commended. These early films showed the common bile duct quite well. After this experience we adopted the routine of taking the first film as soon as the injection is completed; in many cases this film already shows a good build-up of dye in the biliary passages. The second film is taken at seven minutes and thereafter each case must be treated individually.

Our results are summarized in Table I. It will be seen from this that 16 of the patients studied had no gallbladder and therefore oral cholecystography was out of the question. It is in this situation that we look for most help with the intravenous technique, and in three of the cases the method aided the diagnosis: in Case 1, where a common bile duct stone was seen; in Case 21, where the dilatation of the duct and the slow build-up of dye within it suggested obstruction, and a common bile duct stone was found at operation; and in Case 29, where a dilated common bile duct was seen, suggestive of some disease, and an acute-on-chronic cholecystitis was found by the surgeons. In the remaining cases it was of no help and the normal appearance of a common bile duct cannot be taken as excluding gallbladder or bile duct disease. In Case 28, for instance, the common bile duct seemed normal during Cholografin excretion, but ductal fibrosis was observed at operation. In Case 12, where a normal duct was also seen, the autopsy revealed carcinomatosis affecting the gallbladder, pancreas and liver. In five of the cases the duct was too poorly outlined for any definite opinion to be given.

A Graham test was done in ten of the cases. In the five where a good shadow was seen the intravenous method also showed up the gallbladder well. In the other five cases no gallbladder was visualized with the Graham technique. A Cholografin examination, however, showed a good shadow of a dilated common bile duct in Case 2 and a common bile duct stone was found at operation; a fairly well visualized bile duct with no disease in Case 7; a good shadow of a duct which appeared dilated and perhaps contained a stone in Case 14 (a man admitted with acute pancreatitis); a poor shadow of an apparently normal bile duct in Case 25, a stone being subsequently found in Hartmann's pouch; and a good shadow of a dilated common bile duct in Case 29, cholecystitis being found at laparotomy. Thus additional information, over and above that yielded by the Graham test, was

TABLE I.

Case	Time of first opacification (min.)	Time of best opacification (min.)	Degree of bile duct opacification	Year of cholecystectomy	Degree of G.-B. opacification	Result of Graham test	Liver function tests	Pyelogram effect	Radiological diagnosis	Clinical or confirmed diagnosis
1	30	30	Fair	1953	—	Non-visualization G.-B.	Abnormal	Yes	C.B.D. stone with dilatation of duct	Cardiac failure, C.B.D. stone
2		30	Good	No	0	Non-visualization G.-B.	Abnormal	Yes	C.B.D. dilated x 2; no stone seen	Biliary colic and jaundice; op. stone in C.B.D.
3	1	15	Fair	No	Good			No	Normal	Disseminated sclerosis (used as a test case)
4			Poor	1935	—		Abnormal	Yes	Too poorly visualized	Coronary thrombosis; cardiac failure; right upper quadrant pain
5	15	30	Fair	1950	—			Yes	Duct poorly visualized	Suspected post-cholecystectomy syndrome
6	15	30	Fair	1945	Faint			Yes	G.-B. reported; no lesion seen	No G.-B. seen post-mortem; central vascular accident
7	25	40	Fair	No	0	Non-visualization G.-B.		No	No pathology seen in C.B.D.	Cholecystitis
8			Poor	1954	—		Normal	No	Too poorly visualized	Cholelithiasis
9	5	30	Good	No	Good	Good, normal function		No	Normal G.-B.	Hypertensive heart disease
10	15	30	Poor	1939	—			No	No pathology seen; duct poorly visualized	Not diagnosed; refused to stay in hospital
11	7	30	Fair	1944			Abnormal	No	Slight dilatation duct	Inguinal hernia; portal cirrhosis
12	7	15	Good	No	0		Normal	No	Normal duct	Inoperable carcinoma pancreas
13	15	15	Fair	1953	—			No	Normal duct	
14	5	2 hours	Good	No	Fair	Non-visualization		Faint	Slight dilatation? Stone C.B.D.; involuntary melan- cholia	Acute pancreatitis; serum amylase 2472 177
15	0	7	Good	No	Good		Abnormal	No	Stone of cystic duct?	Not diagnosed; patient discharged own wish
16	1	30	Good	No	Good	Normal			No pathology seen	Anxiety state
17	0	0	0	1941	—	—	Abnormal	—	Air in common bile duct	Recurrent attacks obstructive jaundice
18	—	7	Fair	1949	—		Normal	Slight	Dye observed in intestine; morphine no effect; 3 exams.	Gastric ulcer
19	0	5	Good	1949	—			Slight	Normal duct	Pruritus ani
20	10	10	Fair	—	Good	Normal		—	Normal visualization	Sacro-iliac sprain
21	30	45	Good	1949	—			Yes	Obstruction lower end; dilated to 2 cm.; concentration + in later films	Stone in C.B.D.
22	0	0	0	1937			Normal	—		Liver 4,000 gm.; metastases from ca. stomach
23		30	Good	No	Good	Good			Normal	Diagnosis unknown
24	60	60	Poor	No	0		Jaundiced	Yes		Stenosing cholangitis
25	10	30	Poor	1954	—	Non-functioning	Abnormal	—	Short length apparently normal duct	Stone in Hartmann's pouch; duct normal at operation
26	1	15	Fair		Good		Abnormal	Yes		Boeck's sarcoid or Hodgkin's
27	1	15	Good	No	Good	Good		Yes	Normal duct	Chronic pancreatitis
28	15	30	Fair	1950	—			No	Duct normal	Ductal fibrosis of region of sphincter at operation
29	5	30	Good	No	0	Non-visualization	Normal		Dilated C.B.D.	Acute or chronic cholecystitis; fistula between duodenum and G.-B. at operation
30	15	25	Good	No	0	Non-visualization	Normal	Yes	Normal duct	Diagnosis unknown. Carcinomatosis?

obtained in three of ten cases. A report of a non-functioning gallbladder with the Graham test would seem to be a further indication for the use of Cholografin.

The time taken for the *first* opacification of the common bile duct varied from immediately after injection to 60 minutes. While the longest time was observed in the case of a woman with jaundice, suspected to be suffering from stenosing cholangitis, in other examples no clear relationship between this time and the results of liver function tests (thymol turbidity, cephalin flocculation, thymol flocculation, and bromsulphalein excretion) was observed. Thus these tests indicated liver impairment in Cases 11, 15 and 25, yet the first opacification was seen in seven minutes, immediately after injection, and in ten minutes respectively. Case 11, it may be noted, was of proven portal cirrhosis.

The time taken for the *best* opacification varied from five minutes to two hours. Some degree of obstruction seemed to be a factor in determining this time; thus in Case 1 it was 30 minutes (common bile duct stone), in Case 2 it was 30 minutes (common bile duct stone), in Case 14 it was two hours (probable common bile duct stone), in Case 24 it was 60 minutes (stenosing cholangitis), and in Case 28 it was 30 minutes (ductal fibrosis).

The degree of opacification was not clearly related to the results of liver function tests. Opacification was good in Cases 2 and 15, in spite of jaundice in Case 2 and poor liver function tests in both. Visualization was poor in Case 8, although the function tests indicated a normal liver. There was no visualization at all in Case 22 where the liver function tests were normal. The inadequacy of the liver tests was shown, however, by the post mortem findings in this patient, whose liver was riddled with carcinomatous metastases and weighed 4,000 gm.

A pyelogram was seen in 14 of the 30 cases and in five of these suspected or proven duct obstruction was present (Cases 1, 2, 14, 21 and 24). In a sixth case chronic venous congestion with impaired liver function was observed (Case 4). In the seventh case the liver function tests were abnormal (Case 26). In the remaining seven cases there was no evidence of liver dysfunction. On the other hand, pyelograms were not seen in six cases where definite liver or biliary disease was confirmed, namely, in Case 11 with portal cirrhosis, in Case 15 with suspected cystic

duct stone and impaired liver function tests, in Case 17 with history of recurrent attacks of jaundice and abnormal liver function tests, in Case 25 with stone in Hartmann's pouch and abnormal liver function tests, and in Case 28 which had partial obstruction due to ductal fibrosis. It would not seem that a reliable judgment on liver function can be based on the presence or absence of a pyelogram.

VALUE OF INTRAVENOUS CHOLANGIOGRAPHY

After our somewhat limited experience with Cholografin, the following are some of our thoughts about it. The test is relatively simple, needs no special preparation of the patient, and does not depend upon the absorptive powers of the alimentary system, the latter factor sometimes being a hindrance in the case of the Graham test. The drug is non-toxic and produces no reactions in most patients. The method represents a new approach to biliary investigation and, as in the case of the kidney and the intravenous pyelogram, it does introduce some idea of liver function and the working of the biliary system which may be of value. Its ability to show the common bile duct in the absence of the gallbladder forms the sole absolute indication and may be of the greatest help in patients after cholecystectomy. Another indication is probably a failure in the Graham test to visualize the gallbladder. We have found the test useful in six of 30 cases studied.

On the other hand, the massive intravenous injection casts quite a burden on a busy x-ray department, and some patients resent it (many of them are obese elderly women in whom intravenous injection is not easy and at times may prove almost impossible). The material is costly, although as it comes to be used more generally the cost may well become less. Poor results, or no visualization at all, too often occur in just that type of case in which intravenous cholangiography should be most helpful. Cholografin will not produce a better picture of a functioning gallbladder than will Telepaque or other similar compounds. It is not always realized that if, with this latter type of substance, care is taken to expose serial films after giving the fatty meal, extremely good pictures of the cystic and common bile ducts may be obtained, usually with better density than those seen with Cholografin.

At present, therefore, we do not believe that intravenous cholangiography with Cholografin is

likely to replace the well-tried Graham test, but it is an additional means of investigation which may be helpful after cholecystectomy or where a gallbladder has not been visualized. Our results do not suggest that the technique will necessarily give reliable information regarding the functional efficiency of the liver. It is interesting that the excretion may test a separate liver function from that of most of the routine tests.

SUMMARY

Examination with Cholografin was helpful in six of 30 cases studied, supplying information not obtainable by oral methods of investigation. The test is recommended as an adjunct to oral methods, but it is not believed that at present it can

displace the well-tried Graham method. The manufacturer's instructions regarding the timing of the x-ray exposures and the rate of intravenous injection may usefully be modified. The skin test for sensitivity has been unhelpful. As an index of liver function it does not seem to parallel the usual laboratory tests.

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DISEASES OF THE GALLBLADDER: THEIR NATURE AND CLASSIFICATION*

MURRAY R. ABELL, M.D., Ph.D.,†
Ann Arbor, Mich.

NO OTHER VISCUS responds to inflammation with such diversity of morphological reaction as does the gallbladder. Even the superfluous appendix cannot compete with the wide range of tissue changes which occur in the gallbladder. The different responses may be attributed to injury by bacterial, chemical, metabolic, or physical agents, or to combinations of these.

All cases of cholecystitis were considered until fairly recently to be due to infection with streptococci, *Bacillus coli* (*Escherichia coli*) or *Bacillus welchii* (*Clostridium welchii*).^{1, 2, 3} Experimental evidence, however, as well as clinical observations, indicates that in most instances chemical factors are of greater importance than infection, the latter being purely of secondary significance. This cannot, of course, be considered true for *Salmonella* infections or for organisms of great virulence. Womack and Bricker⁴ have demonstrated the irritant effect of stagnant and concentrated bile, and have induced lesions in dogs

that were identical with those observed in human subjects by occluding the cystic duct and/or injecting concentrated bile. Bile salts and cholesterol are considered the most potent irritants, the other constituents being of minor importance. Bisgard and Baker⁵ stressed the possible etiological significance of pancreatic enzymes which, in certain circumstances, may be diverted into the gallbladder. Needless to say, calculi are intimately related to cholecystitis, not only as sequelæ, but also as important factors in recurrent or persistent inflammation.

Table I lists the different types of cholecystitis. Some of the subtypes are used solely in a descriptive sense and cannot be considered necessarily as distinct entities. Acute cholecystitis in a pure form is seen infrequently by the pathologist and most cases which are so labelled by the clinician are actually examples of a new process superimposed on chronic cholecystitis, or are acute exacerbations of chronic cholecystitis. Both true acute cholecystitis and the impure forms are manifested by congestion, œdema, and polymorphonuclear leukocytic infiltration, but an example of the latter type gives evidence of old or healed inflammation in its scar tissue, and calculi are usually present. Bacteria can rarely be demonstrated in the tissues or in the exudate. Non-suppurative inflammation is the rule. Suppurative inflammation, that is, extensive liquefactive necrosis with pus formation and intramural abscess, is the exception. If hæmorrhage is severe or if the mucosa

*From the Department of Pathology, University of Michigan, Ann Arbor, Mich.

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†Assistant Professor of Pathology, University of Michigan.

TABLE I.

A CLASSIFICATION OF CHOLECYSTITIS	
I.	Acute cholecystitis
a.	Acute purulent
b.	Acute suppurative
c.	Acute hæmorrhagic
d.	Acute ulcerative
e.	Acute gangrenous (necrogenic)
II.	Subchronic (subacute, subsiding acute) cholecystitis
III.	Chronic cholecystitis
a.	Chronic proliferative
b.	Chronic productive
c.	Chronic purulent (empyema)
d.	Chronic lipogranulomatous
e.	Chronic lymphofollicular (typhoidal or paratyphoidal)
f.	Chronic calcific ("porcelain" gallbladder)
g.	Chronic cholecystitis with hydrops or mucocœle
h.	Chronic cholecystitis with cholesterolosis
IV.	Recurrent cholecystitis (acute on chronic, or acute exacerbation of chronic cholecystitis)
V.	Miscellaneous types of cholecystitis
a.	Tuberculous
b.	Mycotic
c.	Parasitic
d.	Polyarteritis nodosa

is ulcerated extensively, the adjectives hæmorrhagic or ulcerative are applicable. The inflammatory reaction is sometimes extreme with extensive necrosis and often with thrombosis, although the latter is not an integral part of the process. The gallbladder is greenish black or brown and very friable, accounting for its frequent perforation. In such instances the process can truly be called gangrenous or necrotizing.

Subchronic (subacute or subsiding acute) cholecystitis is characterized by young fibroblastic tissue and by a polymorphous inflammatory cell response with numerous eosinophils and plasma cells. Neutrophils, lymphocytes, and histiocytic macrophages are present also.

Chronic cholecystitis is even more variable than the acute form. Calculi are practically

always present and are more frequently of mixed pigment and cholesterol type. Chronic cholecystitis in conjunction with the metabolic disorder cholesterolosis is of mild degree and usually limited to scattered foci of lymphocytes and plasma cells throughout the wall. There is always some fibrosis of the wall in chronic inflammation. This interrupts the muscularis propria and extends into the perimuscular tissues. Lymphocytes and plasmacytes predominate but there are inflammatory cells of other types. Robertson and Ferguson⁶ have drawn attention to the increased size and number of Rokitansky-Aschoff sinuses or Luschka crypts, which they consider synonymous, in chronic disease. These epithelium-lined diverticula extend through the muscularis propria into the perimuscular and subserosal tissues (Fig. 1). They provide niduses for the formation of calculi (Fig. 2) and of abscesses, and may rupture with resultant bile peritonitis. In persistent low-grade inflammation, mucosal proliferation is sometimes marked, accounting for the terms "proliferative cholecystitis" and "cholecystitis glandularis proliferans." This exuberant overgrowth must be distinguished from early, well-differentiated adenocarcinoma. As a result of a predominantly productive inflammation, the wall of the gallbladder may be almost completely replaced by hyaline fibrous connective tissue in which are foci of chronic inflammatory cells. The gallbladder is literally a fibrous sac and the entity is called chronic productive cholecystitis.

Chronic purulent cholecystitis can be considered synonymous with empyema of the gallbladder, in which the lumen is distended with purulent exudate. Andrews⁷ has pointed out that many examples termed empyema on naked-eye

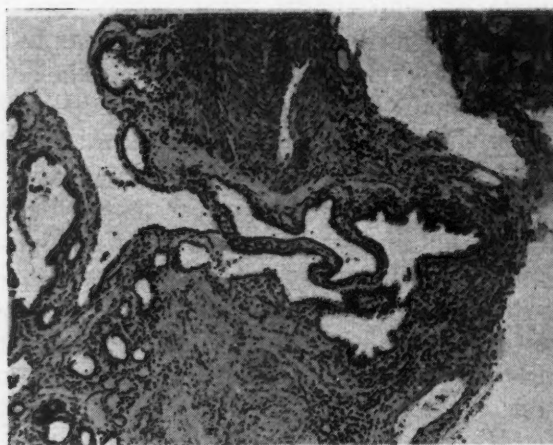


Fig. 1

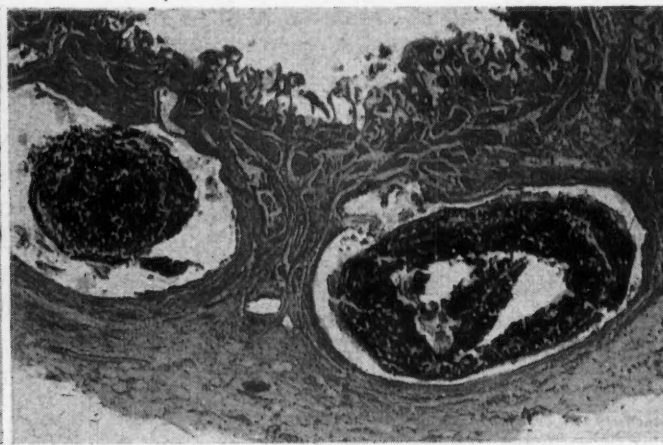


Fig. 2

Fig. 1.—Rokitansky-Aschoff sinus in gallbladder with chronic cholecystitis, extending through the entire thickness of the muscularis into the subserosa. X 45. Fig. 2.—Calculi in Rokitansky-Aschoff sinuses outside the muscularis in the subserosa. X 25.

inspection are not truly such, for the milky fluid distending the lumen is not pus but an emulsion of calcium carbonate or cholesterol. Although frequently mentioned, true empyema is a rare occurrence.

An interesting type of inflammation of the gallbladder results in the formation of intramural lipogranulomas. These areas consist of granulation tissue with abundant fibroblastic proliferation, numerous lipid-containing macrophages, and sometimes cholesterol clefts and multinucleated foreign body giant cells. Weismann and McDonald⁸ have shown by chemical analysis that such gallbladders contain increased amounts of cholesterol and cholesterol esters. The authors concluded that the lipids, especially cholesterol, are etiologically responsible for the granulomatous inflammatory reaction. It is possible that the Rokitsky-Aschoff sinuses play a part in the development of this interstitial reaction.

Another histologically distinctive type of chronic cholecystitis is termed lymphofollicular and is characterized by aggregates of lymphocytes and plasma cells in the substantia propria, sometimes with the formation of lymph follicles. These aggregates or follicles cause a nodular protrusion of the mucosa into the lumen (Fig. 3). Whenever such a histological pattern is observed, the possibility of the patient's being a typhoid or a paratyphoid carrier must be considered, as response of this particular type has been shown to occur in such infections.⁹ Lymphofollicular cholecystitis cannot, however, be considered pathognomonic of *Salmonella* infection.

The extensive deposition of lime salts over the inner surface and in the wall of the gallbladder which results in a viscus of eggshell consistency is termed calcific cholecystitis or "porcelain" gallbladder (Fig. 4).¹⁰ Hydrops and mucocoele of the gallbladder are special manifestations of mild chronic cholecystitis with obstruction of the cystic duct in the absence of significant infection. Theoretically, in hydrops the lumen is distended with a serous fluid, whereas in mucocoele it is filled with mucin. From the practical aspect such a distinction is not always possible.

There are other inflammatory lesions of the gallbladder which are uncommon and which are part of a systemic infection or are secondary to inflammation of an adjacent viscus. The chronic infective granulomas such as tuberculosis or actinomycosis are unusual, the former occurring more often than the latter. Polyarteritis with focal necrosis and inflammation is sometimes seen. Some of these cases show vascular lesions as part of the syndrome of periarteritis nodosa whereas in others the characteristic arteritis appears to be restricted to the gallbladder. There is, as yet, no adequate explanation for the latter group.

A classification of neoplasms and neoplasm-like lesions is given in Table II. Benign neoplasms are uncommon, of little practical significance, and of interest mainly to the pathologist. Hamartomas and choristomas are recognized occasionally. Hamartomas are neoplasm-like masses of adult tissue, the result of faulty development. They consist of tissues that normally make up the viscus in which they are located. Choristomas

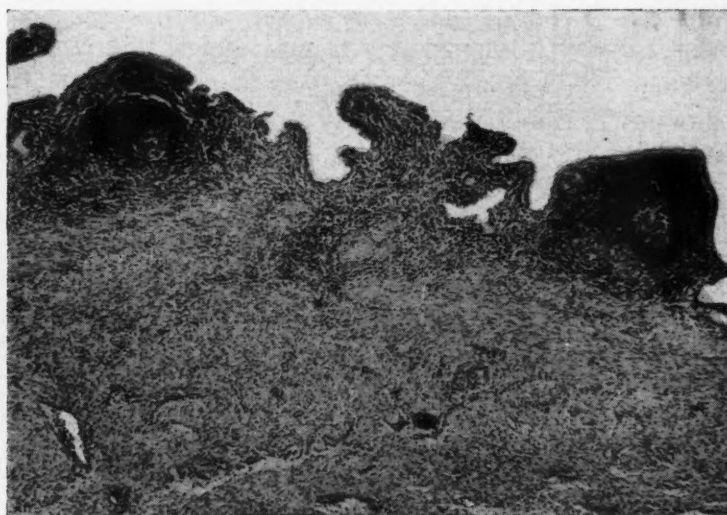


Fig. 3

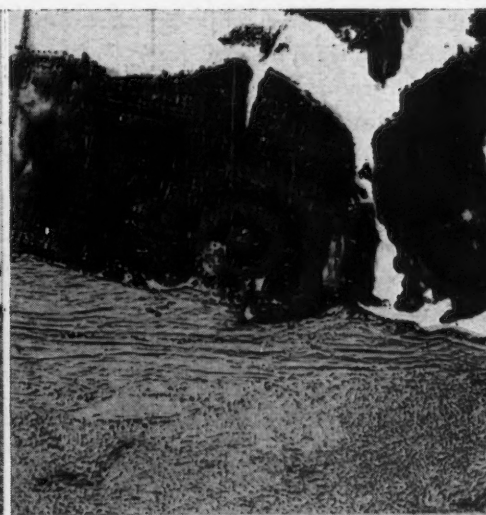


Fig. 4

Fig. 3.—Lymphofollicular typhoidal cholecystitis in a patient who had typhoid fever many years before. Such patients are carriers. Lymphoid aggregates and follicles lie immediately beneath the mucosal epithelium. X 75. Fig. 4.—Chronic calcific cholecystitis or "porcelain" gallbladder. Calcium carbonate covering the inner surface. Similar deposits were present throughout the wall. X 80.

TABLE II.

PRIMARY NEOPLASMS OF GALLBLADDER	
I. Hamartomas and choristomas	
a. Adenomyomatous	
b. Hepatic	
c. Gastric	
d. Intestinal	
e. Pancreatic	
II. Benign Neoplasms	
a. Papilloma	
b. Adenoma	
c. Leiomyoma	
d. Fibroma	
e. Lipoma	
f. Angioma	
g. "Amputation neuroma"	
h. Hæmangiopericytoma	
i. Neurofibroma	
j. Myxoma	
k. Chondroma	
l. Myoblastic myoma (granular cell myoblastoma or neurofibroma)	
III. Malignant neoplasms	
a. Carcinomas	
1. Intramucosal ("in-situ") carcinoma	
2. Adenocarcinoma	
Adenocarcinoma simplex	
Adenocarcinoma papilliferum	
Adenocarcinoma mucosum	
Acantho-adenocarcinoma	
3. Scirrhus carcinoma	
Linitis plastica	
4. Medullary carcinoma	
Signet-ring cell carcinoma	
5. Squamous cell carcinoma	
6. Carcinoid tumour, argentaffin carcinoma(?)	
b. Sarcomas	
1. Leiomyosarcoma	
2. Fibrosarcoma	
3. Hæmangiosarcoma	
c. Lymphoblastoma	

are similar to hamartomas except that they represent adult tissues misplaced from some adjacent viscus. The adenomyoma of the gallbladder may be considered a hamartoma. It consists of a mass of glandular and leiomyomatous elements, either embedded in the wall or projecting into the lumen as a polyp. This was the most common benign tumour in the series reported by Shepard, Walters, and Dockerty.¹¹ A number of interesting choristomas have been reported, but

they are rarities. Probably the most common are the accessory lobes or nodules of adult liver tissue usually projecting from the serosal surface of the fundus. They have no connection with the liver and the small bile ducts penetrate the muscularis to empty into the lumen of the gallbladder. Kerr and Lendrum¹² reported a very interesting mucosal polyp of the gallbladder which was composed of intestinal epithelium with Paneth and enterochromaffin cells and which secreted large quantities of sodium chloride and water. Two rare choristomas are shown in Figures 5 and 6.

True papillomas and adenomas are uncommon.¹¹ Possibly many of the so-called adenomas are actually adenomyomas. Kane, Brown, and Hoerr¹³ found eight examples of papilloma in approximately 2,000 gallbladders. It is logical to assume that some papillomas can undergo a malignant transformation. However, most carcinomas of the gallbladder are not preceded by papillomas. Certainly such papillomas do not play the role in the subsequent development of carcinoma that colonic and rectal polypi do. The other benign neoplasms listed in Table II are even less frequent than those mentioned. One lesion, usually classified as neoplastic but not a true neoplasm, is the "amputation neuroma" which may follow either cholecystectomy or cholecystostomy.

Essentially all malignant neoplasms of the gallbladder are carcinomas. A total of 114 cases of carcinoma of the extrahepatic biliary system, including the gallbladder, were found in 12,838 necropsies performed at the University Hospital (Michigan). As is shown in Table III, eight of these were so extensive that the primary site could not be determined with certainty, but was considered definitely to be either the gallbladder or the extrahepatic ducts. There were 48 cases

TABLE III.

CARCINOMA OF GALLBLADDER AND EXTRAHEPATIC BILE DUCTS (12,838 NECROPSIES, UNIVERSITY OF MICHIGAN)							
Primary site	No. of cases	M.	F.	Percentage of total necropsies	Percentage of necropsies on patients over 21 years	Percentage of necropsies with malignant neoplasia	Percentage of necropsies with carcinomas
Gallbladder.....	48	16	32	0.37	0.53	1.30	2.14
Bile ducts.....	58	41	17	0.45	0.63	1.57	2.59
Extrahepatic biliary system*.....	8			0.07	0.08	0.21	0.36
Totals.....	114			0.89	1.24	3.08	5.09

*These cases were considered to be of either gallbladder or extrahepatic duct origin but the neoplasm was too extensive to be certain of the exact origin.

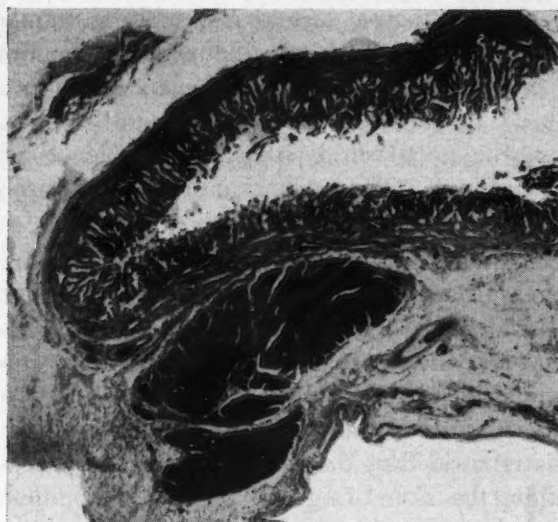


Fig. 5



Fig. 6

Fig. 5.—Pancreatic choristoma. The dark lobulated mass in the subserosa beneath the muscularis is pancreatic tissue. X 10. Fig. 6.—Gastric choristoma of the gallbladder. The polypoid mass of tissue projecting from the mucosal surface is composed of gastric glands. X 10.

of primary carcinoma of the gallbladder and 58 cases of carcinoma of bile ducts, including the ampulla of Vater. The incidences of these carcinomas as percentages of total necropsies performed, of necropsies on patients 21 years of age or older, of necropsies manifesting malignant lesions and of necropsies revealing carcinomas are listed in the table. The figures are similar to those of Kirshbaum and Kozoll¹⁴ and of Jones.¹⁵ The incidence of carcinoma in gallbladders removed surgically is approximately the same, 1 to 2%.^{15, 16}

Carcinoma of the gallbladder is more common in women and in this series was in proportion of two women to one male (Tables III and IV). Many series show even a higher incidence in women. Carcinoma of the extrahepatic bile ducts is significantly more common in men. The incidence of calculi in cases of carcinoma of the gallbladder varies in different series from 60 to 100%. In this series calculi were found in 73% (Table IV). This close association with calculi is not seen with carcinoma of the bile ducts. It is known that in most cases cholelithiasis precedes the development of carcinoma. The sequence of events is probably cholecystitis, chole-

lithiasis, then carcinoma. However, this does not imply a specific carcinogenic activity on the part of the calculi and, although this has been suggested, there is no proof of such action.

It is interesting to note that there were two synchronous primary carcinomas in five of the 48 patients. Four of these cases were unassociated with cholelithiasis. The other primary carcinomas were located in colon, cervix, breast, prostate and stomach. This finding suggests an intrinsic tendency or predisposition to the formation of malignant epithelial neoplasms. Of interest also is one case of carcinoma of the biliary ducts in which multiple autochthonous foci were demonstrated throughout both extrahepatic and intrahepatic bile ducts. This occurrence, as well as a diffuse "cancerization" of the biliary mucosa, is probably far more common than is generally realized and has been stressed by Willis.¹⁷

The various malignant neoplasms that may involve the gallbladder are listed in Table II. Intramucosal carcinoma or "carcinoma *in situ*" is observed in surgical specimens solely as an incidental finding. Its incidence is not definitely known and little attention has been paid to it because as yet there is no practical means whereby it can be diagnosed before operation. It is safe to presume that it probably precedes a high percentage of infiltrative carcinomas. An example is illustrated in Figure 7. Sections from many blocks of this gallbladder revealed a diffuse malignant transformation of the mucosa without infiltration. The cytological features were obviously those of malignant neoplasia.

TABLE IV.

CARCINOMA OF GALLBLADDER*					
	No. of cases	Average age	Age range	Calculi present	Percentage with calculi
Male.....	15	59	(34 - 73)	10	63
Female.....	32	60	(39 - 80)	25	78
Totals.....	48	60	(34 - 80)	35	73

*Multiple primary synchronous cancers in 5 cases; in 4 of these there were no calculi.

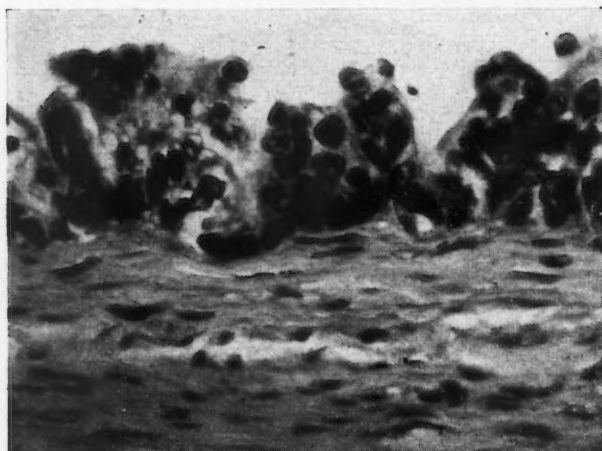


Fig. 7.—Intramucosal carcinoma of the gallbladder. There is a diffuse malignant transformation of the mucosa with no infiltration of the substantia propria. The atypical cells possess large, irregular, hyperchromatic nuclei. There is one division figure near the centre of the field. X 600.

Adenocarcinoma of a moderately well differentiated form comprises the bulk of carcinomas of the gallbladder. The different histological patterns cited under adenocarcinoma (Table II) cannot be considered as distinctive entities, in that two or more patterns may be found in the same neoplasm. However, when one pattern is dominant, the use of the corresponding descriptive term is justified. The term adenocarcinoma mucosum refers to a well-differentiated carcinoma characterized by the production of abundant epithelial mucin. It is similar to lesions in the gastro-intestinal tract. Acantho-adenocarcinoma is

a rather distinctive histological type, so named because of areas of squamous transformation associated with the glandular elements. This term is used in preference to adeno-acanthoma because the neoplasm is basically an adenocarcinoma (Fig. 8). The prefix acantho is used purely in a descriptive capacity.

Scirrhus carcinoma is probably next in frequency to adenocarcinoma and by some authors is considered as a type of adenocarcinoma. When it involves the entire viscus and results in a contracted thick-walled tube, it can be likened to linitis plastica of the stomach or colon. Undifferentiated medullary or encephaloid carcinoma, including the signet-ring cell type, is uncommon, as is pure squamous cell carcinoma. The latter comprises approximately 1% of all carcinomas of the gallbladder and must be differentiated from acantho-adenocarcinoma. Sarcoma of the gallbladder is a curiosity.

Carcinomas of the extrahepatic bile ducts are histologically similar to those of the gallbladder. Scirrhus carcinomas are more frequent and most of the adenocarcinomas show production of mucin.

SUMMARY

The etiological role of chemical irritants in the production of cholecystitis is considered of

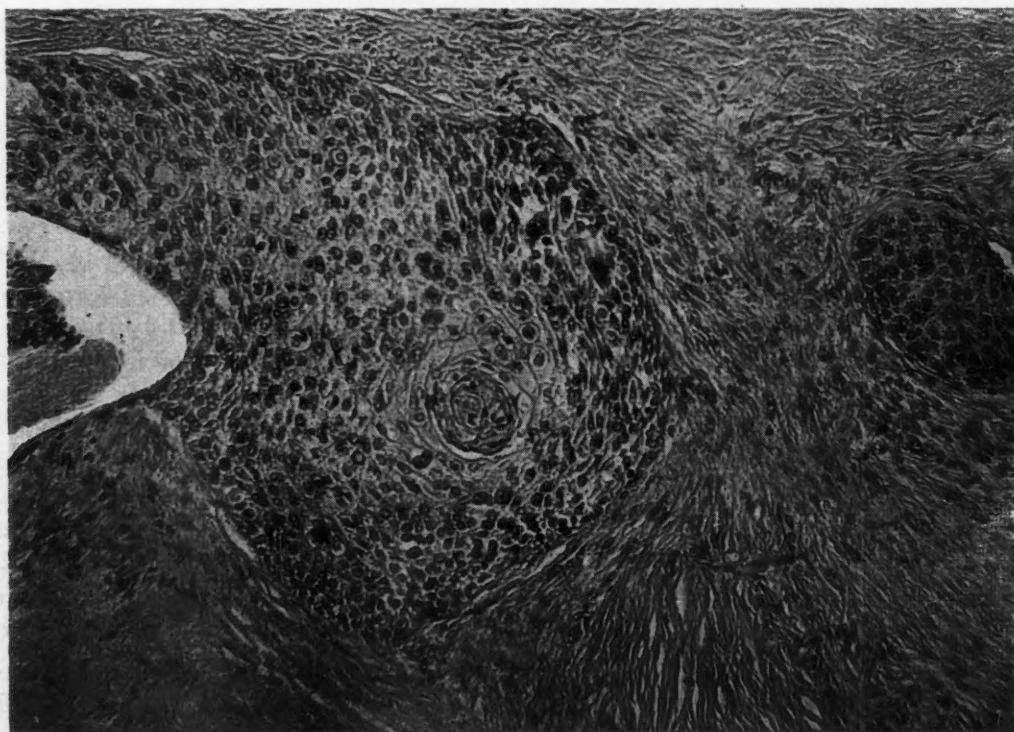


Fig. 8.—Acantho-adenocarcinoma. A solid nest of atypical squamous cells with a central whorl and slight keratin formation. At other levels the neoplasm reproduced glandular structures. X 225.

greater importance than that of bacteria, although the latter cannot be completely dismissed. The histological criteria for the different types of inflammation are cited. Of interest is chronic lymphofollicular cholecystitis which may indicate that the patient is a typhoid or paratyphoid carrier. Most clinical examples of acute cholecystitis actually represent acute exacerbations of a chronic or recurrent cholecystitis.

Benign neoplasms and neoplasm-like lesions of the gallbladder are uncommon. Hepatic, pancreatic, gastric, and intestinal choristomas are rare developmental abnormalities of interest primarily to the pathologist. Cases of carcinoma of the gallbladder and the extrahepatic bile ducts comprised 0.89% of 12,838 necropsies performed at University Hospital, 3.08% of necropsies disclosing malignant neoplasms, and 5.09% of all necropsies with carcinomas. Carcinoma of the bile ducts was more frequent than of the gallbladder. The histological features of the

various malignant neoplasms are discussed briefly and some of the more interesting types illustrated.

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CAROTID ANGIOGRAPHY A CLINICAL EVALUATION OF 200 CONSECUTIVE CASES

DWIGHT PARKINSON, M.D.* and
A. E. CHILDE, M.D.,† Winnipeg, Man.

INNUMERABLE ARTICLES on this subject with excellent reviews of the literature have appeared from centres all over the world. It is not our intention to attempt an additional review. This study was undertaken merely to evaluate cerebral angiography as it is currently used as a diagnostic procedure in a neurosurgical service at the Winnipeg General Hospital.

MATERIAL

Two hundred consecutive cases, from the same neurosurgical service at the Winnipeg General Hospital, in which cerebral angiography was carried out, were chosen in the 1950-53 period. Forty-six of these patients had bilateral carotid angiography and 20 others had repeated angiography, so that in all there were 266 angio-

grams on these 200 patients. All injections were given by the same operator. The patients ranged in age from two months to 80 years. There were 12 in each of the first two decades, 34 in the third decade, 56 in the fourth, 44 in the fifth, 22 in the sixth and 20 over 60 years of age. Thus about 30% were below the age of 30, 50% between 30 and 50 and 20% over 50.

TECHNIQUE

Skin, conjunctival and intravenous testing have been abandoned as they have proved quite unreliable. Some of the most marked reactions to angiography have occurred in patients who had given negative responses to one or more of the above tests. The percutaneous route has been used in all but two patients, one an obese, aged female and the other a two-month-old infant. Local anaesthesia only has been employed in all but 16 patients.

The common carotid artery is palpated between the trachea and the sternocleidomastoid at the level of the thyroid cartilage. A wheal is raised here with 2% procaine, and following this 6 to 8 c.c. of the same solution is injected about the carotid sheath and 3 to 4 c.c. behind it. It has been noted that it is often easier to puncture

*From the Department of Surgery, University of Manitoba Medical School and Winnipeg General Hospital.
†From the Department of Radiology, University of Manitoba Medical School and Winnipeg General Hospital.

the artery and to maintain a satisfactory puncture if there has been a previous unsuccessful attempt with resulting extravasation of blood. This seems to cause the artery to become more fixed in its position. Hence a relatively large quantity of procaine is injected behind to push the vessel forward and immobilize it, making the puncture easier.

A No. 18 needle is employed for the arterial puncture. This needle is connected to a glass adapter fastened to an eight-inch length of rubber tubing and attached by a one-way valve to a 10 c.c. syringe. The entire system is filled with saline. The tidal volume in the glass connector and rubber tube is 2 c.c., an insignificant amount. Once the needle has been inserted through the skin, the one-way valve is opened. As soon as arterial blood enters the needle, the plunger of the syringe is pushed back and the operator can see arterial spurts in the glass adapter. The saline in the system is used for irrigation until all is in readiness for the rapid injection of the opaque solution. In the present series this has been 35% Diodrast.

As a routine, 10 to 12 c.c. of 35% Diodrast is used for each of three injections. Lateral views are obtained following the first and second, the x-ray tube being moved between the injections so that stereoscopic views are produced. Films are taken at one-second intervals for a total of four following each of these injections, thereby securing a very satisfactory coverage of the arterial, capillary and venous phases. This is a sufficient number of radiographs to outline the necessary phases of vascular filling; any fewer might well miss some stages of considerable importance. For instance, the occasional meningioma is visualized much better in the fourth film than in any previous one, even though the arterial, capillary and venous phases are outlined satisfactorily. Although there are reports of satisfactory visualization with as little as 5 c.c. of Diodrast, our experience indicates a need for at least 10 c.c. and preferably 12 c.c.

If the patient notices a pain in the eye, the internal carotid system has always been filled satisfactorily. When there is flushing and a hot feeling in the face, it can be assumed that the external carotid vessels have been filled and in most instances so has the internal, particularly if the injection is well below the bifurcation. If pain is experienced mainly behind the ear, then invariably the injected material has not entered

the artery. Pain in the lower teeth usually has a similar portent. In general, if the injection goes easily and results in no swelling about the site of injection, it has been our practice to consider it satisfactory and to proceed with the next without waiting to view the films. However, if there is any doubt about the injection, the puncture is maintained until the films are developed and viewed.

INDICATIONS

The indications for angiography in this series were as follows: (a) Spontaneous subarachnoid hæmorrhage—46 cases. (b) As a primary procedure in cases of suspected cerebral tumour—74 cases. (c) Suspected cerebral tumour after inadequate visualization by pneumography—38 cases. (d) Aneurysms, suspected for reasons other than spontaneous hæmorrhages—9 cases. These included patients with an intracranial mass suspected of being an aneurysm, pulsating exophthalmos, and one case of atypical facial pain suspected of being due to an aneurysm about the Gasserian ganglion. (e) Focal epilepsy with normal or inconclusive pneumograms—30 cases. (These could be included among cases of suspected tumour or angioma). (f) Suspected thrombosis of the internal carotid artery—3 cases.

Grouping these patients, it is seen that approximately half were suspected of having brain tumours, and one-third were suspected of having aneurysms of one type or another. Most of the remaining patients could be included in either of the above groups inasmuch as they suffered from convulsions of a focal nature and pneumographic studies were inconclusive.

RESULTS

Twenty-two aneurysms were found in the 46 cases of spontaneous subarachnoid hæmorrhage. In two others the aneurysm was located by subsequent pneumography. It should be mentioned here that only in two of these negative cases was the vertebral artery also injected. In the nine patients suspected of having aneurysms for reasons other than bleeding, four aneurysms were found. Two of these were in "ophthalmoplegic migraine", with berry aneurysms demonstrated. In one there was a large mass bulging through the cranium, and in the fourth case an arteriovenous fistula was suspected and found.

Fifteen tumours were located by angiography

alone in the group of 74 cases of suspected tumour in which this was the primary procedure. Three more were positive in that the vessels were displaced but pneumography was used for further localization. In the other 20 cases studies were considered to be negative. In the 38 cases in which angiography was performed after unsatisfactory pneumograms, tumour clouds were actually visualized in 12 and in four more localization by displacement of vessels was sufficiently accurate for safe surgical approach.

Of the 30 patients who had convulsive disorders with an electroencephalographic focus and pneumograms which were either negative or showed regions of focal atrophy, angiograms were considered normal in 29. In the other case there was a tremendous arteriovenous fistula involving most of the left hemisphere. Two subdural hæmatomas were demonstrated by angiography, and it would appear that this is an excellent method of demonstrating such a lesion. Four cases of suspected internal carotid thrombosis were thought to be verified by angiography. Two of these were verified later by autopsy. The possibility that a valve was formed by needle damage to the intima, as demonstrated by Sirois,⁷ was not excluded. One case of thrombosis of the middle cerebral artery was demonstrated.

MORBIDITY

The morbidity from angiography can conveniently be divided into three separate items: the local reactions, the systemic reactions, and the central nervous system reactions.

Under local changes¹ must be listed hæmatoma formation and the resulting tenderness about the site of injection. Interference with nerve function was not noted even as a transient phenomenon aside from the occasional transient sympathetic block. The hæmatoma varied from no detectable extravasation to a large mass extending up under the jaw with marked deviation of the trachea. It was never found necessary to open the region and evacuate a hæmatoma nor was it necessary to intubate because of respiratory embarrassment. It is interesting that an arteriovenous fistula never arises as a result of angiography although doubtless both the artery and vein are on occasion impaled with the same needle advance. Petechiæ often appear about the injection site the next

day, presumably due to local reaction to extravasated Diodrast. Two patients had petechiæ covering the entire side of the face and neck; this can only be interpreted as resulting from a vascular distribution of the medium. It has been pointed out previously that petechiæ appear in the conjunctiva in a high percentage of cases.⁴ A few petechiæ have been visible in the palpebral conjunctiva in every single case in which this region has been inspected the following day. These of course always pass unnoticed unless one particularly looks for them.

Systemic changes included the allergic reactions which were never severe. As mentioned under "Technique," skin testing was not used. It became apparent that those having fairly marked urticarial reactions had not necessarily shown a very positive sensitivity test. Numerous patients exhibited rather dramatic urticarial wheals with central blanching over the face and neck very shortly after injection. This phenomenon always indicated a very satisfactory filling of the external system at least. None went on to develop any respiratory or cardiac symptoms. Observing this transient but violent alteration in the skin, one cannot help but wonder what happens to the brain at the same time in these people. In this series there has been no correlation between this reaction and the development of intracranial symptoms following injection.

Blood-pressure studies during injection were not carried out. Four patients with no previous recordings higher than 140/90 mm. Hg. ran pressures up to 240/120 for as long as eight hours following angiography. In these cases excretory urograms were taken but there was no further investigation of the possibility of phæochromocytoma.

Approximately 5% of the patients experienced considerable malaise and vomiting during the injection period or immediately following it. Some complained of palpitations and others complained of a general feeling of body warmth. The vast majority experienced nothing more than a rather severe burning in the eye and side of the face for about four to five seconds. When 8 to 10 c.c. of 2% procaine was used for infiltration as mentioned above, very few experienced any discomfort during the puncture itself.

Among the central nervous system complications there were convulsions in seven patients during or after angiography. All had a history

of previous convulsions. Two patients suffered a transient increase of pre-existing hemiparesis and aphasia.^{2, 3, 5} Two patients without previous demonstrable weakness suffered a transient hemiplegia lasting approximately eight hours in each case. No tumour or angioma was found in any of these cases in which symptoms were aggravated immediately following angiography. It is believed that such aggravation occurs in cases with vascular insufficiency as the primary basis for the original disability. There were no delayed complications. The use of local anaesthesia avoids the risk of continuing injections in an individual rendered temporarily hemiplegic by one injection.

Four patients experienced hallucinations of bright lights on the contralateral side from the injection. This was therefore interpreted as being due to disturbance of the visual apparatus intracranially rather than to retinal disturbance on the injected side as suggested by Schurr.⁶ In both of these cases there was filling of the posterior cerebral artery. There were several others in the series in whom the posterior cerebral filled by carotid injection but none of these either volunteered or admitted on questioning that they had any visual hallucinations during or following the injection. It seems likely that this phenomenon depends on a susceptibility of the individual to the stimulation, a situation similar to that present in patients having seizures following injection. There is no correlation between the central nervous system complications and the marked urticaria or petechiae in this series.

MORTALITY RATE

It is difficult to assess the mortality in this series inasmuch as the diagnostic procedure was used for underlying processes which were often fatal in themselves.⁸ Three patients died during their hospital stay without other surgical procedures. All three died as a result of subsequent intracranial haemorrhage. These could be considered as deaths due to angiography although there was nothing to indicate that the angiograms altered their progress.

One was a 16-year-old girl in whom an aneurysm had been shown to arise well laterally from the branches of the middle cerebral artery. She died two days after angiography in approximately nine minutes following a massive blow-out of the aneurysm.

The second was a 37-year-old woman in whom an aneurysm had been demonstrated by angiography. Operation was refused. Ten days after angiography she had a repeat haemorrhage and died eight hours later. Autopsy was also refused.

The third was a 7-month-old female infant who suddenly became profoundly unconscious and developed status epilepticus not associated with either trauma or fever. The spinal fluid was grossly bloody. Angiography was performed although the child seemed moribund at the time. She died half an hour later. Autopsy failed to reveal a bleeding site although the maximum collection of blood was about the cisterna ambiens.

Angiography, like excretory urography, can never be exonerated as a potential cause of death, but it is the authors' opinion that no patient in this series died as a result of this procedure.

DISCUSSION

Two hundred consecutive cases of angiography have been reviewed for this study. The technique requires close co-operation between the surgeon, radiologist and assistant, but once mastered is relatively simple and withstands the rigours of constant substitution of the team.

The cassette changer was devised in collaboration with the Picker X-Ray Corporation. It is satisfactory, simple and inexpensive. Improvement will come with an apparatus which will provide simultaneous antero-posterior and lateral films during a single injection. There can be no doubt that the reactions suffered will be less frequent and less severe when a smaller total quantity of contrast medium is injected. Another factor is the interval between injections. The shorter the interval, the greater the likelihood of one of the reactions mentioned above.

About 50% of the films were excellent and an additional 40% were sufficiently satisfactory in that it was not necessary to repeat the examination. Ten per cent were inadequate and injection had to be repeated. This was sometimes done immediately or sometimes at a later date under thiopentone anaesthesia. The failures were more frequently due to the surgeon's technique or to movement of the patient than to mechanical failure.

It is noted that the anterior cerebral artery occasionally does not fill. In all probability this is usually caused by partial obstruction of the carotid flow from the injected side, due either

to the needle position or to accidental compression of the vessel. The opposite carotid then irrigates both anterior cerebrals because of the pressure differential across the anterior communicating artery. The anterior cerebral artery nearly always fills in these cases if the opposite carotid is completely or partially obliterated during the injection. This should always be tried before assuming an anomalous absence or smallness of the anterior cerebral artery.

During the period of this study most patients suspected of cerebral tumour had cerebral pneumography initially, with satisfactory localization of their tumours, and so did not come to angiography. There is no doubt that the diagnostic value of pneumography exceeds that of angiography. However, angiography does not upset intracranial dynamics and force the surgeon into a hurried operation with the risk increased by additional brain swelling. The localizing value of angiography increases with familiarity with the normal vessels visualized in the various phases of arterial, capillary and venous filling. Even midline tumours such as those of the pituitary are very nicely outlined in angiography if they are of any significant size and one is familiar with the normal arterial and venous patterns. No patients with normal angiograms were proved later to have tumours by pneumography. There is greater risk in awaiting angiography after pneumography than in the reverse situation. Hence, if a tumour is suspected in a location that may be visualized by angiography, it is often better to carry out this procedure first. If the tumour is not localized by this examination, the patient is no worse off than before and pneumography can be carried out later.

SUMMARY

Two hundred consecutive cases, each having one or more carotid angiograms, have been reviewed. With due care and skill, cerebral angiography is an extremely valuable diagnostic procedure associated with comparatively little risk. Its overall diagnostic value does not equal that of cerebral pneumography, but it should be used more frequently as a primary procedure in cases of suspected brain tumour as well as a routine for suspected vascular anomalies in properly selected cases.

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RÉSUMÉ

Après avoir pratiqué une série de 266 angiographies sur 200 malades, les auteurs en sont venus à abandonner les épreuves cutanées, conjonctivales et intraveineuses pour le dépistage de la sensibilisation aux produits employés. La méthode suivie est décrite in extenso. La douleur dans l'œil signifie que la carotide interne et ses ramifications ont été remplies. Si le malade rougit et accuse une sensation de chaleur dans la figure, la carotide externe a été injectée; si la douleur se manifeste surtout derrière l'oreille ou dans les dents inférieures, l'injection a été ratée. Les principales indications de l'angiographie cérébrale sont les hémorragies sous-arachnoïdiennes spontanées, les néoplasmes cérébraux, les anéurismes, les cas d'épilepsie Bravais-Jacksonienne, la thrombose de la carotide interne. Parmi les réactions locales à ce procédé se trouvent l'hématome et la douleur à l'endroit de l'injection. Cet hématome peut prendre de fortes proportions sans qu'il soit cependant nécessaire de l'évacuer. Des pétéchies peuvent apparaître le lendemain de l'intervention et sont probablement une réaction au Diodrast. Les réactions généralisées comprennent l'urticaire, des malaises et vomissements et quelquefois une élévation passagère de la tension artérielle. Les convulsions sont les complications les plus fréquentes se rapportant au système nerveux central après l'angiographie. Les auteurs rapportent aussi deux cas d'hémiplégie temporaire. Les hallucinations visuelles sont constantes. 50% des clichés obtenus dans cette série furent excellents, 40% satisfaisants, et 10% durent être repris. Bien que l'encéphalographie gazeuse soit une aide au diagnostic supérieure à l'angiographie dans la plupart des cas, celle-ci n'en permet pas moins la localisation précise de plusieurs tumeurs, même celles dans la ligne médiane tel le néoplasme de la pituitaire. Les auteurs suggèrent de faire passer l'angiographie au premier plan, quitte à la compléter ensuite par l'encéphalographie gazeuse.

M.R.D.

INTERNATIONAL SOCIETY OF SURGERY

This society is holding its Sixteenth Congress this year in Copenhagen from July 21 to 31, under the patronage of the King of Denmark. The president will be Professor Evarts A. Graham of St. Louis. The main topic of discussion will be "The Risks of Surgical Operations." The subject will be introduced by Prof. Leriche of Strasbourg and developed by contributors from Europe, Canada, and the United States. Canadian contributors will include Dr. Bigelow, who will discuss hypothermia in relation to surgery. Professor Filatov, the well-known Soviet eye surgeon, is to speak on blood transfusion. The second theme will be "Hepatectomy" to which Dr. A. Brunschwig of the United States will contribute an account of his experiences.

OPHTHALMIA NEONATORUM*

H. L. ORMSBY, M.D., F.R.C.S.[C.], *Toronto*

CONJUNCTIVITIS of the newborn is a disease of great antiquity and was first recorded in the writings of Soranus, a contemporary of Galen. It was not until the year 1750 that the dependence of the disease upon the discharges of the mother was recognized by Quellmaltz.¹ It was almost one hundred years before this fact was substantiated experimentally by Piringer (1841).² Finally Neisser (1879)³ and Bumm (1846)⁴ established the role of the gonococcus in the etiology of the disease.

As early as 1807, Gibson⁵ had advised preventive measures in eye infections of the newborn. These were the treatment of the mother before delivery, the removal of discharge from the vagina during labour, and the cleansing of the eyes of the infant immediately after birth. It was not until 1881, however, that Credé⁶ initiated prophylaxis with two per cent silver nitrate solution dropped into the conjunctival sac of each eye immediately after delivery. Credé found that the incidence of ophthalmia was reduced from 10% to 0.5% by this procedure.

The Credé method has undergone little change except for the general acceptance of 1% solution of silver nitrate. In 1936, Thygeson⁷ studied 3,939 newborn infants and reported a 6.6% incidence of eye infections (261 cases). There were 23 cases of inclusion conjunctivitis in his series, and only one of gonococcal ophthalmia. Thygeson modified the Credé method by washing out the eyes with 1:8,000 Metaphen solution after birth, and by instilling the silver nitrate solution twice in each eye. He concluded that this method resulted in a very low incidence of gonococcal ophthalmia, but afforded no protection against the virus of inclusion conjunctivitis.

Public health regulations in many parts of the civilized world still require the attending physician to practise the Credé method of prophylaxis. Damage to the babies' eyes by improper compounding or evaporation of the silver nitrate solution has been reported in the literature, but

is of rare occurrence. Allen and Barrere⁹ (1949), at the State University of Iowa Medical School, followed up 4,000 infants in whose eyes 2% silver nitrate was used at birth, and over 14,000 infants who had received 1% silver nitrate prophylaxis. They observed no sequelæ other than a mild chemical conjunctivitis in either of these series. Nevertheless, many excellent studies have been made in an attempt to find a less toxic and equally effective substitute.

Penicillin has had extensive trial as a prophylactic agent in ophthalmia neonatorum, and has been shown to lower the incidence of eye infections in the newborn by Franklin (1947),⁸ Allen and Barrere (1949),⁹ Lehrfeld (1951),¹⁰ and others. Objections have been raised to the use of penicillin for prophylaxis, however, on the grounds that it requires more than one application to the eyes when used topically, and because of the danger of sensitizing the infant to its further use.

Davidson, Hill and Eastman (1951)¹¹ reported a four-year study of ophthalmia neonatorum in which 9,241 infants received penicillin prophylaxis without the occurrence of a single case of gonococcal conjunctivitis. In the first group of 2,463 infants, the mother was given an intramuscular injection of 600,000 units of penicillin G on admission to hospital in labour, and this was repeated in 18 hours if labour was prolonged. The infant at birth was given a single intramuscular injection of 50,000 units of penicillin G. In the second series of 798 infants, a single intramuscular injection of 50,000 units of penicillin was given the infant, but the mother was not treated with penicillin. A third series of 5,980 infants at another hospital were given similar dosage of penicillin.

These authors made a further study of 4,163 infants whom they divided into three groups. The first received one application of penicillin ointment (100,000 units per gram) to the eyes immediately after birth; the second group received intramuscular penicillin (50,000 units); and the third group received two drops of 1% silver nitrate solution from wax capsules, in each eye. There were no cases of gonococcal ophthalmia in any of these infants. The authors concluded that penicillin ointment was an effective prophylactic, and that of the three methods its use resulted in the lowest incidence of discharging eyes.

*From the Departments of Ophthalmology, Bacteriology and Obstetrics and Gynecology, University of Toronto Faculty of Medicine.

As a basis for their study, Davidson and co-workers¹¹ took cervical cultures from 257 patients in the last trimester of pregnancy, and successfully cultured the gonococcus in seven, an incidence of 2.7%. Allen and Barrere,⁹ in a similar study (1949) at the State University of Iowa Medical School Hospital, reported an incidence of 1.5% positive cultures for the gonococcus.

TORONTO STUDY OF OPHTHALMIA NEONATORUM

From October 1950 until September 1954, all eye infections occurring in newborn infants at the Burnside (obstetrical) division of the Toronto General Hospital were examined by an ophthalmic resident who was associated with the eye-bacteriology laboratory for a period of one year. The findings of the first two years have already been reported by Cousineau and Lloyd (1952),¹² and the third year by J. H. Quigley (1953).¹³

Cultures were taken from the conjunctivæ of all discharging eyes by the moist-swab technique, and plated on blood agar and Peizer medium. Secretion smears were stained for bacteria by Gram's method, and epithelial scrapings with Giemsa.

1950 - 1952

Prophylaxis during the first year of the study consisted of instillation of two drops of Sulmefrin* solution into each eye following cleansing of the infant immediately after birth. This preparation is a stabilized aqueous solution of the sodium salts of sulfathiazole (0.5%) and sulfadiazine (0.5%) and had been in use as a prophylactic for several years at the time this study was begun. During the second year (1951-52) the prophylactic at the Burnside was changed to 10% sodium sulfacetamide ointment,† applied once only to the conjunctival sac immediately after birth. A parallel study was carried out at the Women's College Hospital where the prophylactic was 1% silver nitrate.

RESULTS

In Table I the etiological agents believed to have caused the ophthalmia in the babies' eyes are recorded, and are compared with Thygeson's

TABLE I.

ETIOLOGY OF OPHTHALMIA NEONATORUM, 1950 - 1952				
Prophylactic drug	Sulmefrin 1950 - 51 (Cousineau)	10% sulfa- cetamide 1951 - 52 (Lloyd)	AgNO ₃ 1% 1951 - 52 (Lloyd)	AgNO ₃ 1% twice 1936 (Thygeson)
Newborn babies....	1,703 cases	1,127 cases	1,175 cases	3,929 cases
<i>Staph. pyogenes</i>	47	46	8	
<i>D. pneumoniae</i>	11	2	0	
<i>Strep. viridans</i>	11	1	2	
Inclusion bodies....	7	5	1	23
<i>B. lact. aerogenes</i>	4	1	0	
<i>N. gonorrhoea</i>	3	0	0	1
<i>B. antratum</i>	1	0	0	
<i>B. alkaligenes</i>	1	1	0	
<i>B. coli</i>	1	0	0	
No growth....	11	17	15	
Chemical reactions....			59	
Total.....	97 (5.6%)	72 (6.0%)	88 (7.4%)	261 (6.6%)

figures (1936)⁷ for gonococci and inclusion bodies.

From Table I it will be seen that the incidence of gonococcal ophthalmia in each of these series is too low to allow for comparison of the effectiveness of the prophylactic agents. Inclusion conjunctivitis in the Toronto study was less frequent than in that of Thygeson.

1952 - 1953

During the period from July 1 to October 31, 1952, one-half of the infants received one drop of 1% silver nitrate solution in each eye, and alternate babies received 10% sodium sulfacetamide ointment. J. H. Quigley,¹³ in reporting the work of this period, noted that nearly all infants receiving silver nitrate drops developed a chemical conjunctivitis within six to twelve hours after birth, but that only a few of these reactions persisted beyond the 24-hour period. In Table II Quigley disregarded all discharging eyes occurring on the first post-natal day.

It will be seen that on the second post-natal day there were more discharging eyes from which no pathogenic organisms could be cultured with silver nitrate prophylaxis than with sodium sulfacetamide. After the second day the number of discharging eyes in the two groups was about the same.

From October 31, 1952, until September 1, 1954, no prophylactic drugs were used on the public wards of the Burnside. Infants in semi-private wards received one drop of 1% silver nitrate solution in each eye. In Table III, Quigley compared these two groups up to September 1, 1953. He disregarded all discharging eyes on the first post-natal day.

*Sulmefrin: Squibb.

†Sulfacetamide: Schering.

TABLE II.

COMPARISON OF 1% SILVER NITRATE AND 10% SULFACETAMIDE OINTMENT PROPHYLAXIS IN ALTERNATE BABIES (QUIGLEY)

Prophylactic agent	Total newborn infants	Total ophthalmia	Ophthalmia on 2nd post-natal day		Ophthalmia after 2nd post-natal day	
			Non pathogens	Pathogens	Non pathogens	Pathogens
1% silver nitrate.....	442	36 (8.1%)	3.6%	0.7%	1.8% Virus	1.9% 0.1%
10% sodium sulfacetamide ointment.....	443	29 (6.5%)	2.0%	0.7%	1.3%	2.5%

TABLE III.

INCIDENCE OF OPTHALMIA WITHOUT PROPHYLAXIS COMPARED WITH THAT FOLLOWING SILVER NITRATE, OCTOBER 31, 1952 - SEPTEMBER 1, 1953 (QUIGLEY)

Prophylactic agent	Total newborn infants	Total ophthalmia	Ophthalmia on 2nd post-natal day		Ophthalmia after 2nd post-natal day		
			Non pathogens	Pathogens	Non pathogens	Pathogens	
1% silver nitrate.....	783	49 (6.2%)	3.5%	1.0%	0.6%	1.0%	0.1% G.C.
No prophylaxis.....	919	102 (11.1%)	3.2%	1.7%	1.9%	3.9%	0.4% Virus

It will be seen from Table III that on the second post-natal day, in these two groups of infants, there was no difference in the percentage of discharging eyes from which no pathogenic bacteria could be cultured. The higher incidence of discharging eyes after the second day in the public ward babies who had received no prophylaxis may have been due to the greater crowding on this ward with increased chance for post-natal eye infection.

In Quigley's entire series of 2,587 newborn babies, 919 of whom had received no prophylaxis, there were three cases of inclusion conjunctivitis, and only one case of gonococcal conjunctivitis; this was an infant in a semi-private room who had received silver nitrate prophylaxis.

1953 - 1954

During the fourth year of this study, it was the aim of the investigators to gain further statistics on the incidence of gonococcal ophthalmia when no prophylaxis was used, other than the washing of the eyes at birth. During this same period infants in semi-private rooms received 1% silver nitrate prophylaxis.

In Table IV it will be seen that there were

TABLE IV.

INCIDENCE OF OPTHALMIA WITHOUT PROPHYLAXIS COMPARED WITH THAT FOLLOWING 1% SILVER NITRATE SEPTEMBER 1, 1953 - SEPTEMBER 1, 1954

Prophylactic agent	No. newborn infants	Cases of G.C. ophthalmia	Cases of inclusion conjunctivitis
No prophylaxis (public ward)	1101	5	0
1% silver nitrate drops	725	0	2

five cases of gonococcal conjunctivitis in 1,101 newborn babies receiving no prophylaxis. The two cases of inclusion conjunctivitis which occurred in this fourth year of the study were in the group of 725 newborn infants receiving 1% silver nitrate drops.

SUMMARY OF RESULTS: 1950 - 1954

During the overall period of this study in which there were 8,418 births, nine infants developed gonococcal conjunctivitis, and nineteen inclusion blenorhoea.

With Sulmeffin prophylaxis, in 1,703 infants, there were three cases of gonococcal ophthalmia and seven cases of inclusion conjunctivitis.

With 10% sulfacetamide ointment prophylaxis, in 1,570 infants, there were five cases of inclusion conjunctivitis, and none due to the gonococcus.

With 1% silver nitrate prophylaxis, in 3,125 infants, there were four cases of inclusion conjunctivitis and only one due to the gonococcus.

In the final two years of the study, in a total of 2,020 infants on the public wards receiving no prophylaxis, there were five cases of gonococcal conjunctivitis and three cases of inclusion blenorrhoea.

In Table V these results are expressed in terms of percentages.

TABLE V.

PERCENTAGE OF GONOCOCCAL AND INCLUSION CONJUNCTIVITIS IN 8,418 NEWBORN INFANTS				
Prophylaxis	Sulme- frin	Sodium sulfacet- amide	1% silver nitrate	No pro- phylaxis
Gonococcal conjunctivitis	.17	0	.03	.24
Inclusion conjunctivitis	.47	.38	.12	.14
Total newborn infants	1,703	1,570	3,125	2,020

DISCUSSION

Although an attempt has been made to compile the statistics for the four years of this study, it is recognized that the incidence of gonococcal ophthalmia in infants can no longer be anticipated on a yearly basis, since prenatal care of the mother determines to a large degree the fate of the child.

Prophylaxis of gonococcal ophthalmia in the newborn, by the intramuscular injection of penicillin into the mother during labour, would seem to offer the best means of preventing the disease in the infant. Hypersensitivity reactions to this antibiotic, however, are increasing in frequency, and rule out this procedure as a routine in all deliveries. Similarly, treatment of the newborn with intramuscular penicillin would not be entirely free of danger. Davidson *et al.*,¹¹ in their series of over 6,000 newborn infants receiving a single injection of 50,000 units of penicillin, had two unexplained deaths in syphilitic infants, in whom the possibility of a Herxheimer reaction could not be excluded. In their entire series of 12,036 infants given penicillin prophylaxis, only one was known to have developed a sensitivity to the drug. Nevertheless it is a well-established

fact that sensitivity to penicillin seldom occurs after the first injection, and there is no doubt that some of these infants would exhibit reactions in later years upon further treatment.

The use of prophylactic agents in ointment base may be worthy of further trial. In Davidson's series of 1,436 infants receiving one application of penicillin ointment, and in our own series of 1,570 infants receiving one application of sodium sulfacetamide ointment, there were no cases of gonococcal ophthalmia. These series, however, are not large enough to prove the efficacy of this method, and it seems likely that more than one application of any antibiotic or sulfonamide would be necessary to prevent infection in all cases, a disadvantage in home deliveries. The loss of potency which occurs in these preparations over a period of time is an additional disadvantage of their use.

In this study, inclusion conjunctivitis occurred in all series and did not appear to be influenced by any prophylactic. Some cases undoubtedly escaped us, since healthy babies left hospital on the sixth day and this was the shortest incubation period seen. The course of the disease in all infants was mild, and it cleared up spontaneously without treatment in many cases.

Injury to the babies' eyes following the use of 1% silver nitrate drops was not seen during this study. Mild chemical conjunctivitis on the first post-natal day following silver nitrate prophylaxis was of little significance, and did not persist for more than 48 hours. On the third and subsequent post-natal days, discharging eyes were due, in most instances, to pathogenic organisms.

The question of lacrimal duct obstruction following silver nitrate prophylaxis was not dealt with in this study. Allen and Barrere,⁹ in a study of 22 infants with conjunctivitis, found six cases superimposed upon obstruction of the nasolacrimal passages. Four of these were in infants who did not receive local prophylaxis, and two were in those given 1% silver nitrate drops.

The occurrence of gonococcal ophthalmia in five out of 2,020 infants receiving no prophylaxis at birth in this study indicates the need for continuation of this practice. Silver nitrate drops were shown by Credé to reduce the incidence of this disease from 10% to 0.5%. Today, with the improvement in the venereal disease picture, one could expect, on the basis of these statistics, an incidence of 0.012%, or one case of gonococcal

ophthalmia in 8,000 births with silver nitrate prophylaxis.

Comparative studies of prophylactic agents for ophthalmia neonatorum are obviously inaccurate statistically, in view of the infrequency of gonococcal conjunctivitis. One per cent silver nitrate drops have stood the test of time, and in this study have caused no harmful effects other than a mild chemical conjunctivitis during the first two post-natal days. While we await the outcome of present and future studies with antibiotics and chemotherapeutic agents, it is well to recognize that the Credé method is relatively harmless, and is an efficient prophylactic measure for gonococcal ophthalmia in the newborn.

SUMMARY

1. In a study of 8,418 newborn infants, there were three cases of gonococcal ophthalmia in 1,703 receiving two drops of Sulmeffin solution in each eye at birth, one in 3,125 receiving one drop of 1% silver nitrate solution, and none in 1,570 infants receiving one application of 10% sodium sulfacetamide ointment.

2. In 2,020 infants receiving no prophylaxis at birth, there were five cases of gonococcal ophthalmia.

3. Mild chemical conjunctivitis was seen in most infants receiving 1% silver nitrate prophylaxis. This cleared within 48 hours and no other sequelæ were observed.

4. Inclusion conjunctivitis occurred in each series, and did not appear to be influenced by any of the prophylactics. All cases of this disease ran a benign course, and many cleared spontaneously without treatment.

5. One per cent silver nitrate solution applied to the conjunctival sac at birth is an efficient prophylactic for gonococcal ophthalmia.

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ANÆSTHETIC PROCEDURES IN A SMALL COMMUNITY HOSPITAL*

L. J. PATTERSON, M.D., *Red Deer, Alta.*

THE OBJECT of anæsthesia, whether in a small or large hospital, is primarily to provide the patient with safe analgesia for the duration of a surgical procedure. The secondary consideration is to provide the surgeon with a type of anæsthesia commensurate with the surgical procedure he has in mind. In a small hospital, the safety factor must be taken into consideration even more seriously than in the larger one, because of the paucity of trained personnel. It is essential to provide a child or adult patient with a type of anæsthesia from which recovery is rapid and in which the vital functions are not too deeply de-

pressed. It goes without saying that the safety factor is not always too seriously considered where speed is a necessity; this is particularly so when minor procedures are being done at the end of a long morning of major surgery. In working with and for a group of doctors such as I see in our own city I often carry out the preanæsthetic examination in the office, especially for any major procedure which would take over half an hour. The examination for tonsil anæsthesia, I am sorry to say, is often not done until the morning of the anæsthetic, except in the case of adults; for this reason the examination can only be cursory and the anæsthetic procedure is therefore not without some risk. If the patient is seen at the office, however, a physical examination can be done; and, most important, the history of a previous anæsthesia can be more easily elicited along with that of any diseases especially affecting the circulatory and respiratory system. In adult anæsthesia it is most important to define

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the actual age of these two systems, so that the proper estimate of risk can be made and the proper anæsthetic provided. Occasionally it may even be necessary to cancel any major operation if one feels that the procedure does not warrant the risk.

The responsibility of administering an anæsthetic is a great one, since the anæsthetic agents comprise the most potent drugs at a physician's command. Employment of any one agent or technique will not give proper anæsthetic care to even a small fraction of a practice. *The duties of the anæsthetist are never to be lightly undertaken.* Hospital practice of anæsthesia involves a great deal more than just arriving in time to give a scheduled anæsthetic. The physician has a duty to the patient, the surgeon and the hospital.

1. The physician's duty to the patient is to see the patient the night before a scheduled operation. He should review the history and perform a physical examination. The patients are generally more fearful of anæsthesia than of surgery. On the basis of the physical and emotional status of the patient the anæsthetic is chosen; it is absolutely impossible to give a physiologically sound anæsthetic on any other basis. Preoperative medication depends on the findings and the medical history. Many of the agents used are allergens to which many people have undesirable reactions—this must be kept in mind.

2. The anæsthetist must fulfil his duty to the surgeon—namely, to manage affairs during the operation so that the patient is not harmed by the anæsthetic and the surgeon can properly perform his work. The anæsthetist's duty to the surgeon includes observation of the patient until all possibility of post-anæsthetic complication is past; thus, the competent anæsthetist and surgeon are a team working to improve the patient's surgical care.

3. The physician also has duties to the hospital in which he gives anæsthetics. One of these is the maintenance of good anæsthetic records so that the patient's course in surgery becomes a valuable part of the clinical record. Pulse, respiration, blood pressure, statement of agents that were used, supplementary medication and other pertinent data should be part of the record. The anæsthetist who understands the fundamentals of anæsthesia develops a special knowledge of oxygen therapy and problems related to respiratory distress. It is his duty to make this knowledge available to the hospital in all its aspects

and he should take part in the hospital staff programmes to promote understanding of the problems of anæsthesia amongst the entire surgical staff. Finally, knowledge of drugs and techniques, knowledge of the psychic and physical status of the patient, careful anæsthetic administration, co-operation with the surgeon, maintenance of the proper anæsthetic record and the encouraging of good anæsthesia among others are the minimum responsibilities of any physician who administers anæsthetics.

The safest anæsthetic for use where a gas machine is not available is ether. Ether, while it is old-fashioned, can be very useful. In a case which is difficult, induction may be done with 2½% Pentothal (thiopentone). Every doctor who gives more than one anæsthetic a year should be able to intubate and describe the procedure for intubation. Extubating is almost as important as intubating, and one should be very careful here. Curare is safe only if the patient is watched very closely. Some method of resuscitation should always be handy when an anæsthetic is given. There are very few contraindications to ether. Spinal anæsthetics are used in certain cases where poor liver and kidney function or diabetes is found.

As suggested above, it is sometimes necessary to use procedures which are not considered by some to be safe—one of these is spinal anæsthesia. Volumes have been written on spinal anæsthesia, both pro and con. Here we have an example of the public condemning a procedure which in the hands of one who knows what he is doing is very useful. Because of certain unfortunate publicity, this type of anæsthesia has gone into unfair disrepute. I think there are three reasons for this: public antipathy, post-spinal headache, widely separated and rare cases of residual paralysis.

Public antipathy, I believe, has unfortunately been fed by the publications of pseudo-experts in popular magazines. What we can do to fight this, I do not know; it is very difficult to ignore, and much talking is required to offset the harm done.

Post-spinal headaches, from my own experience, are certainly most common in people who suffer from various neuroses. I do not mean by this that these headaches are not real and that they are only another manifestation of neuroses. There is a real biochemical change in the spinal fluid, brought on slowly and enhanced by

time, which is the basis for spinal headaches. It has been my practice to use as small a needle as I could, usually a 23, and to use always a hyperbaric solution. In treating the post-spinal headache, keep the patient flat and allow him to get up over a period of five days for a very slowly increasing period, limited by the time it requires to start the spinal headache again. In this gradual "getting-up" process I have used Dexobarb, a combination of Dexedrine and phenobarbital. In an effort to raise intradural pressure, I have introduced normal saline extradurally, with only slight success.

There have been cases reported of residual paralysis and paræsthesiæ following spinal block. These are, however, very rare and, while I do not say that they are entirely avoidable, I feel that perhaps a careful technique is a factor in cutting down their incidence. I believe that the big thing to remember here is that the rarity of these residual paralysees and paræsthesiæ will compare favourably with the frequency of anæsthetic accidents of other types. It is unfortunate that they are so dramatic because they attract far more publicity than any other residuum of anæsthetic disaster.

In the giving of spinal anæsthetics it is my impression that first of all the ideal patient is one who is sold well on the idea of spinal anæsthesia. I do this selling in two ways. First, I impress on the patient how easy it is on the system generally and how easily it is controlled; secondly, I impress on him how it makes the procedure for the surgeon easier and presents him with a field in which he can work at a leisurely pace. It goes without saying that a very careful technique is necessary; patients should preferably be put in the lateral position, either right or left, and scrupulous attention should be paid to the painting and sterilizing of the field before lumbar puncture is attempted. I prefer hyperbaric solutions myself because they are much easier to use and they do, I believe, give a more prolonged anæsthesia. Again, I believe it is important to adopt a technique and to use it so long and often that one knows exactly its limitations in the hands of the man using it. There are many little factors which will become very familiar through frequent use, and which keep the procedure a safe one, as long as the techniques are not varied too rapidly or too often.

From the duties, skills and activities of an anæsthetic specialist, he would be better defined

by the designation pneumatologist. The field of anæsthesia is limited by terminology to the control of pain, but the physician practising in this field is not limited and as a matter of fact is advised to make his special skill available when and where required: in the emergency care of the unconscious patient outside as well as inside the hospital; and in the event of acute asphyxial accident. These accidents take place every day and 50,000 patients per year die from asphyxia in its many forms, such as gas poisoning, drug poisoning, and dozens of accidents—30,000 of these are newborn babies. Furthermore, in a hospital where a patient is suffering from chronic impairment of circulation and respiration, the anæsthetist trained in the pathology of these conditions is probably better able than anyone else to handle them.

The fundamentals of anæsthesia for which the hospital is legally and morally responsible are safety, efficiency and comfort in that order. This order must never be reversed or changed. Eighty per cent of accidents, injuries and deaths are caused by human failure. The human causes are listed under three headings: lack of knowledge or skill, state of mind or body, improper attitudes.

In emphasizing the role of the consulting pneumatologist in the anæsthetic service, it should be pointed out that while the laws of physiology, biochemistry and pharmacology are fairly constant, variations resulting from the individual, his disease and the surgery to be performed add factors that only the trained physician, in this case the pneumatologist, is qualified to evaluate. A staff member of the community hospital instructed in anæsthesia and inhalation therapy might well be trained at hospital expense. In a difficult emergency he would stand the surgeon in very good stead and, by reason of the basic safety of his skill, he would contribute greatly to the successful conclusion of any difficult emergency.

The demand for administration of oxygen for therapeutic purposes has progressively increased. The initial cost of installing and equipping a central manifold and pipeline system is greater than the investment in cylinders, regulators, trucks and other equipment required to serve the same number of outlets through use of cylinders at the bedside. The manifold should be located in a room specific for this purpose only. A smaller manifold may be installed to provide for piping of nitrous oxide to appropriate locations,

such as the operating room. A pipeline may be installed in any building. Outlet valves may be attached to rigid wall plates or housed in wall boxes. In anæsthetizing locations, a flexible system employing quick couplers may be installed for distribution of oxygen and nitrous oxide. Each oxygen delivery line servicing an anæsthetic machine through a yoke insert should have a back check-valve installed in the line immediately adjacent to the yoke insert. This is to prevent back-flow of oxygen from a small cylinder with oxygen under a higher pressure than in the pipeline. Oxygen and nitrous oxide, each at a pressure of 50 lb. per square inch, are piped to operating rooms, delivery rooms and emergency operating rooms in the hospital. The manner of supplying a manifold or pipeline is influenced by the amount of oxygen used, by the physical construction of the building and by estimation of future requirements. The principle of distribution of oxygen gas through a pipeline of permanent construction has been established as sound.

Indications for oxygen therapy can be considered under four headings.—(1) Hæmorrhagic conditions in which the total quantity of hæmoglobin is diminished. (2) Cyanotic states in which the quantity of blood presented to the lungs does not become saturated, or in which the circulation is so impaired that the circulating blood is excessively desaturated. (3) Demand states which include fever, hyperthyroidism and other conditions. (4) Energy-sparing states including cardiac or respiratory conditions in which the patient gets along well at a reduced level of activity, but fatigues rapidly if that level is exceeded; such conditions include heart failure and angina. The methods of administration include face mask, catheter or nasal mask, and oxygen tent.

The administration of oxygen intravenously was recently revived by Cole; here oxygen is introduced in bubbles so small that the gas is rapidly absorbed by the blood.

Oxygen therapy should be instituted at once after operation if there is any degree of anoxia. It is most simply administered by means of a catheter at a flow rate of 10 litres per minute, which will give an oxygen concentration at the carina of 60-70%. It should be watched closely and should be continued until the pulse rate is stable. If the pulse rate rises after withdrawal of oxygen, it should be immediately readministered. Where there is pulmonary cedema, oxy-

gen is given under pressure. Carbon dioxide-oxygen mixtures often help in the prevention of atelectasis.

Oxygen therapy is guided by the patient's condition, with special reference to cyanosis, air hunger, pulse and respiration rate, blood pressure and mental state. The patient is usually started at a fairly high oxygen concentration; if there is no benefit within 8 hours, the procedure is discarded as useless. As the patient improves, the oxygen rate may be reduced till the minimal amount is found which will maintain the patient's condition at the highest level.

One should point out the possibilities of harm from the inhalation of oxygen: the elimination of carbon dioxide and the depression of respiration, circulation, and cerebral cortical function.

One could not finish without mentioning recovery rooms and post-anæsthetic rooms, which are piped for suction and oxygen. In the construction of any modern hospital, recovery rooms adjoining the operating suite should be insisted upon. The ideal, of course, is to have specially trained personnel to conduct the recovery phases; unfortunately in the small community hospital this is not always possible.

In summing up, I should like to say that the ideals of anæsthesia are the same everywhere. They are four: safety for the patient; convenience for the surgeon; protection for the hospital; ambivalence and adjustability in the anæsthetist. The greatest of these is safety.

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OXYTETRACYCLINE AND ISONIAZID RESISTANCE IN TUBERCULOSIS

In combination with streptomycin in tuberculosis therapy, oxytetracycline (Terramycin) has been shown to reduce the incidence of resistance to streptomycin. A combination of oxytetracycline and isoniazid in 33 cases of pulmonary tuberculosis was compared with isoniazid alone in 17 similar cases. As a result, it is considered that 5 gm. oxytetracycline daily is probably of value in delaying or preventing the onset of isoniazid resistance, "but this combination is likely to be less effective than that of streptomycin or PAS with isoniazid."—Stewart *et al.*: *Brit. M. J.*, 2: 1508, 1954.

THE TREATMENT OF TRICHOMONAS, MONILIA AND MIXED INFECTIONS OF THE VAGINA


ADEODAT SAUCIER, M.D. and
RENE SIMARD, M.D., Quebec

AT THE PRESENT TIME it is difficult to obtain any exact idea of the incidence of cases of vaginitis due to trichomonas, monilia and mixed infections. Various authors who have described the condition in Germany, United States and France—Donné (1837), Rodecourt (1934), Hoehne (1916), Burger (1953) and Heseltine (1951-52)—give widely different statistics, ranging from 10% to 88% of the total incidence of vaginitis. Here, in the Hôpital de la Miséricorde of Quebec, we have observed an overall frequency of approximately 30% to 35% of patients suffering from all types of vaginitis; approximately 90% of these patients show trichomonas.

Vaginal for three days, followed by two for 12 days. A control smear was then taken. Regardless of the laboratory findings—that is to say, whether the result was positive or negative—treatment was continued with a second course of the drug, consisting of one suppository daily for another period of 15 consecutive days. At the end of this second treatment period (that is, after 30 days) a second control smear was taken and finally, 15 days later, a last control examination was made. If the second control smear was still positive, treatment was continued with one suppository daily for 15 days, and another smear was taken. This was repeated until a negative result was obtained.

It is especially important to bear in mind that one cannot be guided by the symptomatic improvement of the patient, but only by the result of the laboratory examinations. Indeed, although all patients showed marked improvement in leucorrhoea and itchiness after the first five or six days of treatment, in some cases a positive smear was still obtained at the termination of the treat-

TABLE I.

PROGRESS IN A CASE TREATED WITH PROPI-VAGINAL							
Dates of smears	Laboratory findings for trichomonas	 pH cervix	pH vagina	Duration initial treatment period	Leucorrhœa	Continuation of treatment	Pain or erythema due to drug
2/12/53	positive	7.5	5.0	December 9 to 25, 1953	present	—	none
26/12/53	negative	4.5	4.5	—	present	—	none
25/ 1/54	positive	4.5	4.5	—	present	Second treatment 21/1/54	none
8/ 2/54	negative	7.5	7.5	—	present	Third treatment 24/2/54	none
24/ 2/54	negative	7.5	6.0	—	absent	—	none
11/ 3/54	negative	—	—	—	absent	—	none

In a group of patients showing such infections, which required prolonged treatment, often with little or no improvement, it was decided to institute therapy with a preparation of sodium propionate, propionic acid, and diiodohydroxyquinoline, known as Propi-Vaginal,* which has been claimed to lead to no burning or local irritation. We shall present an outline of the procedure employed and of the results obtained.

The procedure employed was as follows: After an initial vaginal smear had been taken, the first course of treatment lasting for 15 days comprised daily insertions of three suppositories of Propi-

ment periods referred to above. Irrespective of the duration of the treatment employed, in no case was there any evidence of local erythema throughout the entire group of patients.

In order to exercise more rigid control of the patients during the treatment periods, the Propi-Vaginal suppositories were inserted by the attending nurse for each patient, and this was continued for the duration of treatment. In addition, the patients were kept in bed for a period of 20 minutes after insertion of each suppository.

A typical protocol from one patient, showing the procedures employed in order to control the effects of the treatment in each of the patients, is shown in Table I.

*Propi-Vaginal is a vaginal suppository containing sodium propionate, propionic acid, and diiodohydroxyquinoline with added lactose, dextrose, boric acid and lactic acid.

The results obtained in 40 similarly treated cases are summarized in Table II, showing the results of laboratory examinations at the various stages of treatment and the final smear obtained 15 days after the end of treatment.

TABLE II.

SUMMARY OF RESULTS			
Treatment	Tricho- monas positive	Tricho- monas negative	Untoward effects
First course—30 days:			
after 15 days.....	6 cases	34 cases	none
after 30 days.....	8 "	32 "	"
Final smear:			
15 days after end of treatment.....	5 "	35 "	"
Second course— duration 15 days...	4 "	9 "	"
Third course— duration 15 days...	2 "	1 "	"

As can be observed from the data, eight patients had a positive smear after the first complete course of 30 days' treatment. There were also five other patients who, even 15 days after termination of such treatment, still showed a positive smear. Of this total of 13, there were, however, only four who remained resistant and still showed a positive smear after supplementary treatment for 15 days with one Propi-Vaginal suppository daily. In only three of these cases was it possible to carry out a third similar course of treatment, as one of the patients delivered prematurely. In fact, this investigation could not be continued for more than two months on the average for each case, since all patients left the hospital soon after being delivered.

It was noted both by the attending nurses and ourselves that the five patients whose smears remained positive or reverted to positive were the most careless in their personal hygiene. Indeed, these were patients who had no conception of personal hygiene, and all advice or suggestions given them were in vain. In order to prevent spreading of infection and reinfection, the patient must be warned that in the course of her vulvar toilet she should always proceed from before backwards and not vice versa.

SUMMARY

Propi-Vaginal is clearly a highly effective preparation for the types of vaginitis mentioned above. Treatment with three of these suppositories daily for three days, then two daily for

twelve days, and thereafter one per day for a period of fifteen days, leads to complete cure in approximately 80% of cases, without any evidence of local irritation due to the presence of the suppositories.

The authors desire to express their sincerest appreciation to the attendant nurse, as well as to personnel of the laboratory, consulting and sterilization services, who have so generously given their assistance towards the proper conduct of this study, despite the added work which it has imposed upon them.

This investigation was rendered possible through its authorization by the Chief of Service, Dr. René Simard, and through the generosity of the Anglo-French Drug Company, who kindly supplied the Propi-Vaginal suppositories used throughout this study.

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SERUM CHOLESTEROL AND DIETARY FAT

It is well known that the level of cholesterol in the serum may be considerably lowered by the use of diets containing little or no fat. But not only are such diets unpalatable, they impose a strain on the metabolism: needed fats are synthesized by the body itself.

Workers at the Rockefeller Institute for Medical Research have found that, in normal obese persons receiving a diet on which their weight remained constant, there was a marked drop (about 20%) in the cholesterol, and a lesser drop in the phospholipid levels, when vegetable fats were substituted isocalorically for the animal fats which had made up 45 to 52% of the intake. On return to the original diet, the cholesterol and phospholipids rose to their former levels. The patients' health remained apparently unaffected by these changes in diet.—Ahrens, E. H., Jr., Blankenhorn, D. H. and Tsaltas, T. T.: *Proc. Soc. Exper. Biol. & Med.*, 86: 872, 1954.

SEPTICÆMIA DUE TO
GRAM-NEGATIVE BACILLI*D. S. MUNROE, M.D. and
W. H. COCKCROFT, M.D.,
Vancouver, B.C.

SEPTICÆMIA due to bacteria of the coliform and related groups of organisms is seen not infrequently in a general hospital, yet there are relatively few reports of this condition in the literature. This paper is concerned with septicæmia due to Gram-negative bacilli of the coliform, *Pseudomonas* and *Proteus* groups.

Felty and Keefer¹ in 1924 reported a series of cases of sepsis due to *Escherichia coli* and in 1951 Waisbren² published an excellent report on bacteræmia due to Gram-negative bacilli. The latter reported that approximately 40% of the positive blood cultures in a general hospital were due to this group of organisms, and in the vast majority of these cases the genito-urinary tract appeared to be the origin of infection.

In the Vancouver General Hospital during the years 1951, 1952 and 1953, 33% of the positive blood cultures were due to organisms of this group. It is the purpose of this report to give our experiences with regard to the finding of these positive blood cultures and to analyse the cases in an attempt to elucidate the clinical features, associated diseases and treatment. It is realized that the use of the findings of a routine bacteriological laboratory to indicate the frequency of these infections may give a grossly false impression because the blood cultures were taken at the discretion of a large number of clinicians. In spite of this objection, however, our figures do indicate that, contrary to not infrequently expressed opinion, septicæmia due to Gram-negative bacilli is quite common and quite important.

Whether the condition under review should be called septicæmia or bacteræmia is debatable. Some of our cases may well have had only a bacteræmia, but neither the clinician nor the bacteriologist can determine this with any certainty on the basis of a positive blood culture. The clinician must act on the assumption that he is dealing with a septicæmia. We have therefore decided that septicæmia is the preferable

term, and certainly this is so when treatment is to be considered.

METHODS AND MATERIAL

The cases were those of 44 patients who had one or more positive blood cultures in the laboratory at the Vancouver General Hospital during the period January 1951 to December 1953. In the routine technique for taking the blood cultures 10 to 12 c.c. of venous blood was collected in a citrate bottle and, in the laboratory, a poured plate was made using 2 c.c. of blood with 40 c.c. of blood agar base. The remainder of the specimen was split between two 50 c.c. tubes of dextrose brain broth containing 0.1% agar. Arterial culture has rarely been attempted and none is included in this series. Antibiotic sensitivity tests were carried out by the disc method and sulfonamide sensitivity tests were done using Mueller Hinton medium containing 10 mgm. % sodium sulfadiazine. The aureomycin solution for the discs was made up to 100 mcg. per ml. in pH 3 buffer and the streptomycin and chloramphenicol solutions contained 500 mcg. per ml. The medium used for these tests was usually nutrient agar and the plates were incubated at 30° C. for 18 hours. Using 6 mm. filter paper discs, any strain showing a zone of inhibition of 12 mm. diameter or more was called relatively sensitive. On the sulfonamide medium the absence of growth from a light inoculum was used as the criterion of sensitivity.

Table I presents an analysis of all blood cultures taken at the Vancouver General Hospital for the three-year period. It will be seen

TABLE I.

BLOOD CULTURES
(VANCOUVER GENERAL HOSPITAL—1951, 1952 AND 1953)

	1951	1952	1953	Total	% positive
Total blood cultures taken..	715	960	1,098	2,773	—
Total positive blood cultures..	36	43	54	133	4.8%
Total positive blood cultures due to enteric Gram-negative bacilli—44 cases*.....	10	12	23	45	1.6%

*One patient had a septicæmia due to two types of Gram-negative bacillus.

*From the Departments of Medicine and Bacteriology, Vancouver General Hospital. Presented to the North Pacific Society of Internal Medicine, Spokane, Washington, March 1954.

that 1.6% of all blood cultures taken during this period yielded enteric Gram-negative bacilli. It is also clear from this table that 33% of all the positive blood cultures were due to this group of organisms.

Table II shows a breakdown of the etiological organisms. The striking thing in this table is the recent increase in incidence of septicæmia due to *Proteus*.

TABLE II.

POSITIVE BLOOD CULTURES FOR ENTERIC GRAM-NEGATIVE BACILLI* (44 CASES)**

Organism	1951	1952	1953	Total
<i>E. coli</i>	5	5	5	15
<i>A. aerogenes</i>	4	1	3	8
Paracolon.....	0	2	2	4
<i>Ps. pyocyanea</i>	0	1	2	3
<i>Proteus</i>	1	3	11	15
Total.....	10	12	23	45

*Salmonella and Bacteroides not included.

**One patient had septicæmia due to two types of Gram-negative bacillus.

SENSITIVITY TO ANTIBIOTICS

The strains of *E. coli* and the paracolon bacilli were more sensitive to antibiotics than the other organisms in Table II. Table III shows a summary of these tests.

With this technique for determining sensitivity of the strains, chloramphenicol inhibited more organisms than did any other antibiotic. This is more marked with the strains of *Proteus*, 50% of which were sensitive to chloramphenicol.

No mention has been made in the table of the effect of polymyxin, mainly because our *in vitro* tests have often been difficult to read. However, the clinical use of this drug in pyocyanus infections has been encouraging.

The percentages given in Table III refer only to the strains of organisms isolated in this series of blood cultures. However, the figures, with the

TABLE III.

POSITIVE BLOOD CULTURES—GRAM-NEGATIVE BACILLI SENSITIVITY TO ANTIBIOTICS AND SULFONAMIDES

Organism	No. of strains tested	Percentage of strains sensitive to			
		Aureomycin	Chloramphenicol	Streptomycin	Sulfadiazine
<i>E. coli</i>	15	55	92	77	85
<i>A. aerogenes</i>	8	50	64	37	50
Paracolon.....	4	50	75	75	75
<i>Ps. pyocyanea</i>	3	0	33	33	33
<i>Proteus</i>	15	0	50	7	7

exception of those for the *Pseudomonas* group, fall fairly well into line with what we have found when dealing with a much larger number of strains isolated from urine and other clinical material. Most *Pseudomonas* strains appear to be sensitive to polymyxin and almost half of them also to sulfonamides, while a lesser number of strains have been inhibited *in vitro* by the other antibiotics.

TABLE IV.

BLOOD CULTURES POSITIVE FOR OTHER ORGANISMS

Organisms	Number of patients with positive blood cultures			
	1951	1952	1953	Total
<i>Staph. pyogenes</i>	8	11	8	27
<i>Staph. (coagulase-negative)</i>	0	3	5	8
<i>M. tetragenus</i>	0	0	1	1
<i>Strep. pyogenes</i>	1	3	1	5
<i>Strep. faecalis</i>	0	0	1	1
<i>Strep. viridans</i>	2	4	2	8
<i>Strep. (anaerobic)</i>	1	0	2	3
<i>D. pneumoniae</i>	3	2	3	8
<i>N. meningitidis</i>	5	3	2	10
<i>H. influenzae</i>	2	1	3	6
Bacteroides.....	4	1	0	5
<i>Salm. typhi</i>	1	2	4	7
<i>Salm. paratyphi</i>	0	1	0	1
Unidentified Gram-negative bacillus.....	0	0	1	1
Total.....	27	31	33	91

Table IV shows the numbers of patients with positive blood cultures for other organisms in the same period. It is of interest that there were almost as many positive blood cultures for the organisms under study in this paper (45) as there were for all types of staphylococci and streptococci (53).

PORTAL OF ENTRY

The portal of entry of the bacteria into the blood stream was the urinary tract in over one-half of the cases (59%). The next most common portal of entry was the female genital tract

(11%). Suppurating wounds were the portals of entry in 3 cases (7%). In two cases a similar organism was recovered not only from the urine but also from another focus in each (female genital tract in one case and tracheotomy wound in one case). The biliary tract was believed to have been the portal of entry in one case and the umbilical cord may have been the portal in one case.

The portal of entry was unknown in 5 cases (11%). Four of these patients had blood dyscrasias, there being one case each of lymphatic leukæmia, aplastic anæmia, thrombocytopenic purpura and multiple myeloma. In the other patient with blood dyscrasia in the series (agranulocytosis due to aminopyrine) the portal of entry was the urinary tract.

PRECIPITATING CAUSE

The precipitating cause of the septicæmia was unknown in most of the cases. Some at least of the abortions were criminally induced and presumably this was the precipitating cause in these cases. In six of the cases in which the urinary tract was the portal of entry, the septicæmia developed within one week of transurethral operation on the prostate or bladder. Several other patients had had operations on the urinary tract but not directly related in time to the development of septicæmia. That transient bacteræmia frequently follows transurethral prostatic resection was shown by Biorn *et al.*³ In their series of cases, none developed septicæmia. It is generally recognized, however, that septicæmia may occasionally be precipitated by transurethral prostatic resection.

CLINICAL FEATURES

The clinical features of septicæmia due to the organisms under discussion vary tremendously. The patient's condition varies from one of utmost urgency and gravity to that of a low-grade, indolent, subacute illness. The tempo of the illness may be fulminating, with death in a few days, or the patient may go on for weeks with ultimate recovery. Twenty-eight of our patients were males, 16 females.

The febrile response is very variable. The illness is frequently ushered in with a series of rigors, one or more per day, or the patient may have a sustained fever of low or high grade which may continue for days. Ultimately, most

patients will have at least one rigor. In our series, 75% had at least one rigor, the hallmark of a septicæmia. It is to be noted, however, that rigors may be absent throughout a comparatively long febrile course with resultant dimming of diagnostic suspicions. In fact, one of our patients who died from his septicæmia had a fever on one day only, several days before death. Petechiæ were not seen in any of these cases.

Shock is not uncommonly the most striking clinical feature of septicæmia due to Gram-negative bacilli. This has recently been emphasized by Waisbren,² by Wise, Shaffer and Spink,⁴ by Braude *et al.*^{5, 6} and by Stevens *et al.*⁷ from the University of Washington School of Medicine. Wise, Shaffer and Spink reported that 8 of 53 patients with positive blood cultures due to Gram-negative bacilli had severe hypotension and shock. The etiological bacteria were *A. aerogenes* in 3 cases, *E. coli* in 2, *Proteus* in 1, paracolon bacilli in 1, and *Salmonella typhimurium* in 1. Six of the 8 patients ultimately succumbed. Braude *et al.* have reported 4 similar cases of severe shock with 3 deaths.

The severity of the shock following transfusion with blood contaminated by Gram-negative bacilli has been stressed in papers by the Seattle group,⁷ by Braude *et al.*^{5, 6} and by Borden and Hall.⁸

When we reviewed the protocols in our cases, severe hypotension and tachycardia were frequently noted and in several instances much effort was expended in trying to determine the cause of the shock-like state and in attempts to alleviate it. It was frequently very difficult to determine to what extent the septicæmia was the cause of the hypotension because of complicating factors such as other associated disease or the sudden onset of auricular fibrillation or presence of an obviously terminal state.

Excluding all these cases, there were 10 cases in which, apart from septicæmia, no factor which could have produced the shock-like state was present. In these cases the blood pressure was recorded, in different individuals, as between 50 and 90 mm. Hg systolic for appreciable periods of time up to several days. This hypotension usually was associated with a tachycardia. Five of this group were young (age 31-40), and five were old (age 69-78). All recovered.

Table V shows a list of associated conditions. Some patients had more than one associated dis-

TABLE V.

ENTERIC GRAM-NEGATIVE BACILLARY SEPTICÆMIA (44 CASES)	
Associated conditions	No. of cases
Structural abnormality of urinary tract.....	20
Abortion.....	6
Pregnancy at term.....	2
Blood dyscrasia.....	5
Diabetes mellitus.....	5
Cirrhosis of liver.....	2
Other.....	6

ease (e.g., diabetes mellitus and necrotizing papillitis) while, in other cases, the portal of entry was clearly due to a urinary infection without structural disease or abnormality of the urinary tract.

Apart from urinary infection, which was present in every case in which the urinary tract was the portal of entry, the structural abnormalities in the urinary tract included benign prostatic hypertrophy, carcinoma of the prostate, carcinoma of the bladder, renal calculi, pyonephrosis and necrotizing papillitis. The five blood dyscrasias were composed of one case each of chronic lymphatic leukæmia, aplastic anæmia, multiple myeloma, thrombocytopenic purpura and agranulocytosis due to aminopyrine. All five patients with diabetes had associated urinary infection and two were proved to have necrotizing papillitis at operation or autopsy.

Bulbar poliomyelitis was the basic disease in one patient. The portal of entry in this case was an infection either of the urinary tract or of the tracheotomy wound. Both of these sites yielded the same organism as was present in the blood stream. Staphylococcal septicæmia was associated in two cases, and pneumonia, carcinoma of the stomach, carcinoma of the pancreas and subacute bacterial endocarditis (due to *Streptococcus faecalis*) were the associated diseases in one case each. One patient (an infant of six days) had meningitis due to *E. coli*. Mitral stenosis was an associated but unrelated disease in one case.

Seven patients in this series developed metastatic septic foci due to their septicæmia. These foci were widespread abscesses in one case, lung abscesses in three cases, abscess of myocardium in one case and splenic abscess in one case; these six patients died. The seventh patient developed a vertebral abscess in which cure ultimately was achieved.

The mortality in this series was 35%. The mortality was 86% in those with metastatic foci and 80% in those with blood dyscrasias. Table VI shows the essential features of the fatal cases. It will be noted that most of these patients had serious organic disease and that in two of the cases staphylococcal septicæmia was also present. Autopsy was done on all except one.

TREATMENT

The treatment of septicæmia due to Gram-negative bacilli may be considered under three general heads.

1. *Specific treatment.*—The choice of antibiotic is frequently difficult in infections of this nature as the organisms involved show marked differences in their *in vitro* responses to antibiotics. The *in vitro* response is the best guide we have and in our opinion it is a fairly reliable one. Based on this series of cases, chloramphenicol would appear to be the most likely antibiotic to succeed in a case of Gram-negative bacillary septicæmia. However, the sensitivity tests are often only a relative indication of the effectiveness, and other broad spectrum antibiotics such as aureomycin and terramycin have often been used successfully either in large doses or intravenously. Sulfadiazine is frequently of great value, as indicated in Table III.

Some cases were seen that did well on penicillin and streptomycin which were started before the results of the blood cultures were known. However, it is felt that in these instances streptomycin was the effective agent. Penicillin alone rarely influences infections of this type. It is evident that, as we are dealing with a condition whose course even when untreated is not predictable, we are unable to be dogmatic about the treatment of choice. Moreover, at times certain strains of Gram-negative bacilli may predominate in an institution just as do the staphylococci, and treatment pending specific bacterial studies of the case should be based on local experience and the above generalizations.

2. *The treatment of shock.*—This is similar to the treatment of shock in other situations and includes the use of blood plasma, plasma expanding solutions, oxygen, cortisone, and pressor agents. Norepinephrine (noradrenaline) is believed to be of considerable value in this regard but was rarely used in this series of cases.

3. *Drainage of a septic focus.*—This might include cervical dilatation and uterine curettage,

TABLE VI.

ENTERIC GRAM-NEGATIVE BACILLARY SEPTICÆMIA (44 CASES). MORTALITY TABLE:						
<i>Sex</i>	<i>Age</i>	<i>Organism</i>	<i>Diseases present</i>	<i>Portal of entry</i>	<i>Autopsy</i>	<i>Comment</i>
F.	42	<i>E. coli</i>	Cirrhosis liver. Chronic infective hepatitis. Urinary infection. Acute hæmorrhagic pancreatitis.....	Ur. tract	Yes	
M.	75	<i>A. aerogenes</i>	Ca. stomach with biliary obstruction. Liver abscess. Diabetes. Necrotizing papillitis.	Ur. tract	Yes	
M.	70	<i>E. coli</i>	Hypertensive heart disease. Benign prostatic hypertrophy.....	Ur. tract	No	Died 3 days after TUPR*.
M.	62	<i>E. coli</i>	Chronic lymphatic leukæmia.....	Unknown	Yes	
F.	31	<i>E. coli</i>	Aplastic anæmia. Retroperitoneal hæmorrhage.....	Unknown	Yes	
M.	81	<i>A. aerogenes</i>	Arteriosclerotic heart disease. Staphylococcal septicæmia. Pyæmic abscess myocardium. Benign prostatic hypertrophy.....	Ur. tract	Yes	Blood culture positive 2 days after TUPR.
M.	70	<i>Proteus</i>	<i>H. influenzae</i> pneumonia. Multiple lung abscesses.....	Unknown	Yes	
M.	67	<i>A. aerogenes</i>	Acute heart failure. Prostatic hypertrophy. Left renal calculus.....	Ur. tract	Yes	
M.	75	<i>Proteus</i>	Old myocardial and cerebral infarction. Chronic pyelonephritis. Early aortic bacterial endocarditis.....	Ur. tract	Yes	
M.	72	<i>Proteus</i>	Old ca. penis (amputated). Recent resection metastatic inguinal nodes Thrombophlebitis with pulmonary embolism.....	Wound	Yes	
M.	69	<i>A. aerogenes</i>	Ca. prostate with metastases. Pyonephrosis. Abscess spleen.....	Ur. tract	Yes	Blood culture positive 16 days after TUPR.
F.	28	<i>Proteus</i>	Pregnancy at term. Bulbar poliomyelitis. Tracheotomy. Widespread abscesses.....	Ur. tract or wound	Yes	
M.	64	<i>Proteus</i>	Multiple myeloma. Subacute bacterial endocarditis due to <i>S. faecalis</i>	Unknown	Yes	
M.	69	<i>E. coli</i>	Thrombocytopenic purpura.....	Unknown	Yes	Cholecystectomy and splenectomy 18 days before.
M.	70	<i>Proteus</i>	Staphylococcal septicæmia. Benign prostatic hypertrophy. Lung abscesses.....	Ur. tract	Yes	

*TUPR = transurethral prostatectomy.

or incision and drainage of an abscess, or ureteral catheterization, or even nephrectomy in a case that has failed to respond to adequate antibiotic therapy. That the drainage or removal of a septic focus is of the utmost importance is exemplified by the following brief case report.

CASE REPORT

Mrs. A.R. was a known diabetic of several years' duration. She had been reasonably well, although almost blind and quite deaf, until the day before admission to hospital, when she developed a severe pain in the left lower quadrant of the abdomen. She was clear mentally on admission to hospital but when first seen

by one of us (D.S.M.) a few hours later she was unconscious. Examination brought forth nothing of note except pin-point pupils and very slow respirations. A few hours later she was again clear mentally and it was felt that she had had a reaction to morphine which had been given.

Soon after awakening, patient had a rigor with temperature elevation to 104.5° F. Her diabetes was adequately controlled. The urine showed pyuria and, after taking a blood culture, treatment was begun with penicillin and streptomycin. The blood culture yielded a paracolon bacillus, as did the culture of the urine. The organism was sensitive to streptomycin, aureomycin, aureomycin and chloramphenicol, and sulfonamide.

The patient had another rigor on the day after admission and on the following day cystoscopy and retrograde pyelography were done by Dr. John Balfour. No dye excretion was noted from the left ureter. The left pyelogram showed much disorganization of the renal

pelvis and a large cavity replacing the inferior major calyx. The right pyelogram was normal and kidney function on the right was normal. The probable diagnosis was thought to be necrotizing papillitis.

The patient's condition showed some slight improvement in the next two days but the response was considered inadequate. Streptomycin was stopped and aureomycin intravenously in large doses begun. She became progressively worse and six days after admission a left nephrectomy was done by Dr. Balfour. The kidney showed acute and chronic pyelonephritis, papillitis necrotans and septic thrombosis of the renal vein. Cultures of the pelvis of this kidney revealed paracolon bacillus.

The patient's condition was immediately and dramatically improved. Antibiotic therapy was continued for some time. She was discharged apparently well six weeks after admission. Two months later she was readmitted to hospital with destructive lesions of the bodies of the 11th and 12th dorsal vertebrae and of the disc between. This had been the cause of local pain for the preceding two weeks. Needle biopsy revealed purulent material but it was sterile to culture. The pathological diagnosis on this material was chronic osteomyelitis. The patient was treated on a Bradford frame and was given aureomycin. The lesion was cured in nine months after the date of the second admission.

COMMENT

The variety of diseases with which Gram-negative bacillary septicæmia may be associated and the frequency of the condition make the subject one of practical importance at the present time. Perhaps the most important fact is that if penicillin alone is used as preliminary treatment in cases of suspected septicæmia, it will fail in one-third of these cases because of the insensitivity of the enteric organisms. It is therefore strongly recommended that all cases of possible septicæmia, after a blood culture has been taken, should be treated with an antibiotic which usually is effective against enteric organisms as well as against the more common Gram-positive cocci. If penicillin is to be used, it must not be used alone but in conjunction with an antibiotic which is known usually to be effective against Gram-negative bacilli. This is especially important if the patient is in shock, if he has any disease of the urinary tract, if he has had a recent operation on the urinary tract or if he is a diabetic. More precise bacteriological therapy can be ordered when definitive bacteriological studies are at hand.

Contamination of blood with Gram-negative bacilli has come to be recognized as one of the three great hazards of blood transfusion, the other two being homologous serum jaundice and incompatibility of blood. With modern blood banks, contamination of this type may, it is said, be expected in 1 to 3% of transfusions. In any case, the presence of a rigor during a transfusion with subsequent shock should lead to investigation of this possibility and to immediate specific antibiotic treatment.

SUMMARY

1. An analysis has been made of 44 cases of Gram-negative bacillary septicæmia occurring in a three-year period at the Vancouver General Hospital. These cases constitute 33% of the total cases of septicæmia which occurred in the same period.

2. The bacteriological and clinical data have been reviewed. The portals of entry and associated diseases have been noted.

3. Treatment has been discussed. Because of the frequency of this type of septicæmia, it has been recommended that, at least until precise bacteriological diagnosis has been made, the treatment of all cases of suspected septicæmia should include an antibiotic which is known to be effective against Gram-negative bacilli in most instances.

4. It has been noted that serious or even fatal reactions occur from transfusion of blood contaminated by Gram-negative organisms.

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THE HUMP IS NOT FOR WATER

Does the camel have a special compartment in his stomach or hump for storing water? The answer to this old puzzler is no.

That is what two scientists found out in the Sahara desert. They were particularly interested in determining how the camel manages to survive in the hot, dry regions that mean death to most other creatures.

They learned that camels hardly ever sweat at all, even in extreme heat. This "stinginess" with body moisture enables them to go for months without a drink. One of the experimental camels subsisted for 17 days on nothing but hay and dried dates out in the scorching sun where the temperature often exceeded 100° F. But when a camel does drink, it can tank up in a hurry. One moisture-starved animal downed 30 gallons within ten minutes.

THE *TREPONEMA PALLIDUM*
IMMOBILIZATION TEST IN
CANADASURVEY OF RESULTS OVER A
TWO-YEAR PERIOD

HERBERT B. SMITH, JR., B.Sc.,* Toronto

ALL ATTEMPTS, thus far, to culture *Treponema pallidum* on an artificial medium have failed. But in search of this goal Nelson¹ devised a sustaining medium in which the treponemes would be kept virulent and motile for sufficient periods to allow investigation. Later, Nelson and Mayer² described a phenomenon of immobilization of *Treponema pallidum* in the presence of syphilitic sera and from this the T.P.I. test was developed.³ Many investigators have taken up the study^{4, 5, 6, 7} but these have been mainly concerned with improving either the medium or techniques; a few laboratories have performed restricted studies.

In 1951, the T.P.I. test was introduced by the Ontario Department of Health, for use in diagnostic problem cases relating to syphilis. Early in 1952, these facilities were extended so that physicians in any province could submit specimens to the Central Laboratory in Toronto for testing purposes. The number of tests received was controlled through the Provincial Venereal Disease Control offices and several stipulations as to qualifying sera were laid down. These were: (1) Any serum submitted for T.P.I. testing should have been examined by the Standard Serologic Tests for Syphilis (hereafter referred to as S.T.S.) on two previous occasions. This allowed for errors in mass routine testing and also, presumably, allowed time for the immobilizing antibodies to form. (2) Specimens from known treated cases of syphilis were discouraged because the disappearance of immobilizing antibodies after adequate treatment varied with the stage during which treatment was instituted.^{16, 17} Exception to the above stipulations was made in the case of prenatal examinations, only one previous S.T.S. report sufficing. In spite of these prerequisites, specimens from treated cases of syphilis were submitted and examined either because of doubt of the original diagnosis or failure to obtain an accurate history of the patient.

It was also felt that, since the intricacies of the T.P.I. test would continue to be a limiting factor to the number of tests which could be performed, some correlation of T.P.I. results with the Standard Serologic Tests should be made. It must be emphasized that this survey, because of our preliminary criteria, was limited to a specific group, mainly concerned with a diagnosis of latent syphilis, and should not be interpreted as determining the specificity of the S.T.S. as they are performed in a routine laboratory. The Central Laboratory of the Ontario Department of Health examined 240,245 specimens in 1952. Of this number 96.31% were reported as "no reaction" (non-reactive); 1.78% were reported as "reaction present" (reactive), indicating a reaction in both the Kahn and Kolmer tests with the quantitative Kahn titre being given in dilution; and 1.9% were reported as "inconclusive," indicating either a disagreement of reaction between the two standard tests or a reaction (weakly reactive) in either or both below the recognized positive standard.⁸ It is the sera falling into the last two categories that qualify for the T.P.I. test in this study.

TECHNICAL PROCEDURE

The procedure adopted closely parallels that described by Nelson.³ Not less than 25 x 10⁶ organisms are injected into each testis of a year-old rabbit, and the infection manifests itself as an orchitis in 7-11 days. Within 48 hours of the first signs of this orchitis, the testes are removed and either used immediately or stored in a special container,* which enables quick freezing and storage at -70° C. in a dry-ice-alcohol mush.⁹ Serum specimens received are inactivated at 56° C. for 30 minutes and stored at -20° C. until examined. The media are shown in Table I.

The sliced fresh or frozen (-70° C.) testis is placed in an appropriate amount of medium in an extraction flask under 95% nitrogen, 5% carbon dioxide tension and gently shaken in a water bath at 35° C. Pilot examinations are made. When the concentration of 6-10 organisms per high dry field (40x objective and 12.5x ocular) is reached, the supernatant is removed and centrifuged at 1,000 r.p.m. for 10 minutes and is then ready for use. Any increase above this concentration of treponemes leads to: (1) decrease in the percentage of motile organisms in the controls, and (2) less sensitive end point.¹⁰ Included in every batch are complement and positive controls. Each serum also is set up as a control tube in order to detect the presence of antibiotics, particularly penicillin, or other toxic ingredients. In this respect the sera from tuberculous patients on PAS and streptomycin treatment have proved extremely toxic. *In vitro* neither PAS nor streptomycin alone or together exerts this effect. The tubes are then incubated in Brewer jars for 16 hours and readings made by darkfield microscopy, the percentage of motile spirochaetes being calculated. Oxygen appears very toxic to *T. pallidum* and from the time of operation to the time of examina-

*In charge of T.P.I. Unit, Ontario Department of Health Laboratories, Toronto, Ontario.

*Aero-Joblex structural insulating material.

TABLE I.

<i>Ingredient</i>	<i>Concentration</i>	<i>Storage temp.</i>	<i>Vol. used</i>
Bovine albumen powder (fraction V).....	5 gm./100 ml. iso-saline	+5° C.	20.00 ml
Phosphate buffer.....	—	+5° C.	6.26
Saline ultrafiltrate of beef serum.....	—	+5° C.	2.50
Sodium glutathione.....	1.23 gm./100 ml. saline	-20° C.	1.26
Sodium cysteine.....	0.63 gm./100 ml. saline	-20° C.	1.26
Sodium pyruvate.....	1.0 gm./100 ml. saline	-20° C.	0.62
Sodium thioglycollate.....	1.5 gm./100 ml. dist. H ₂ O	-20° C.	1.20
Sodium bicarbonate.....	1.26 gm./100 ml. dist. H ₂ O	+5° C.	2.26

TABLE II.

CLASSIFICATION OF READINGS								
					<i>T.P.I. result</i>			
	<i>Patient's serum</i>	<i>Inactive Compl.</i>	<i>Active Compl.</i>	<i>Antigen</i>	<i>Positive</i>	<i>Doubtful</i>	<i>Negative</i>	<i>Unsatisfactory</i>
Control.....	0.05 ml.	0.05 ml.	—	0.4 ml.	80-100%	80-100%	80-100%	0%
Test.....	0.05 ml.	—	0.05 ml.	0.4 ml.	0-20%	21-79%	80-100%	0%

tion the organisms are kept under analysed nitrogen-carbon dioxide gas mixture; any interval when this is not possible is kept to a minimum.

CLASSIFICATION OF READINGS

All unsatisfactory tests are repeated after penicillinase has been added and if they continue to give the same result are reported as unsatisfactory. The greatest percentage of specimens in this group, however, have been cleared with penicillinase; this tends to point to the use of penicillin by the patient, either overlooked or not brought to the attention of the physician. Toxicity from other sources such as containers and method of collection and storage of samples is being investigated.¹⁰

RESULTS OF TEST

All S.T.S. results shown in Tables III to VIII were obtained on the same serum specimen as the T.P.I. result.

TABLE III.

CORRELATION OF STANDARD SEROLOGIC TEST RESULTS WITH T.P.I. RESULTS

Pres. Kahn.	Ins.	+	+	+	—	+	—	
Standard Kahn....	Ins.	+	—	+	—	—	—	
Kolmer Wassermann	Ins.	+	+	—	+	—	—	<i>Total</i>
T.P.I. positive..	114	516	51	45	21	62	29	838
T.P.I. negative..	120	90	41	115	27	122	259	774

It must be pointed out that, in the cases of negative S.T.S. at the time of the T.P.I. test, as indicated in the final column, most of these sera were from patients who in the past had shown positive reactions in the S.T.S. Five sera were from patients with clinical signs such as Argyll-Robertson pupils and Hutchinsonian teeth, while the sera in routine S.T.S. were negative. It must be presumed in the remainder of T.P.I. positive, S.T.S. negative cases, that "reagin" followed the course of declining to below detectable levels, as is not uncommon in late latent syphilis. Table IVa represents a breakdown, including titres, of those sera giving a positive result in all three S.T.S. +(Ins.) indicates a positive reaction but insufficient for quantitative titre. Table IVb represents a breakdown of specimens submitted in which the Standard Kahn was positive but the Kolmer Wassermann was inconclusive (++ or less).

From Tables IVa and IVb it will be noted that 90 specimens (64 + 26) or 14.8% of the total 606 (516 + 90) showing a reaction in all

TABLE IVa.

Pres. Kahn....	+	+	+	+	+	+	+	+	
Standard Kahn....	+(Ins.)	1:1	1:1	1:2	1:4	1:8	1:16	1:32+	
Kolmer Wassermann...	+	+	+	+	+	+	+	+	<i>Total</i>
T.P.I. positive...	117	71	33	50	67	66	43	37	484
T.P.I. negative...	11	32	4	2	11	2	2	0	64

TABLE IVb.

Pres. Kahn	+	+	+	+	+	+	+	+	
Standard Kahn	+	+	+	+	+	+	+	+	
Kolmer	+	1:1	1:1	1:2	1:4	1:8	1:16	1:32+	
Wassermann	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Total
T.P.I. positive	3	18	3	4	2	0	1	1	32
T.P.I. negative	0	18	0	2	2	3	1	0	26

of the Standard S.T.S. gave negative T.P.I. results. These biological false positive reactors show no significant difference as regards titre in the Standard S.T.S. from those individuals suffering a syphilitic infection.¹¹

TABLE V.

REACTION IN PRESUMPTIVE KAHN AND KOLMER WASSERMANN ONLY. (Inc. = ++ or less)			
Pres. Kahn	+	+	
Stand. Kahn	—	—	
Kolmer Wassermann	Inc.	+	Total
T.P.I. positive	8	43	51
T.P.I. negative	16	25	41

TABLE VI.

REACTION IN KOLMER WASSERMANN ONLY. (Inc. = ++ or less).			
Pres. Kahn	—	—	
Standard Kahn	—	—	
Kolmer Wassermann	Inc.	+	Total
T.P.I. positive	6	15	21
T.P.I. negative	12	15	27

TABLE VII.

REACTION IN PRESUMPTIVE KAHN AND STANDARD KAHN WITH QUANTITATIVE RESULTS SHOWN IN DILUTIONS									
Pres. Kahn	+	+	+	+	+	+	+	+	
Standard Kahn	+	+	+	+	+	+	+	+	
Kol. Wass.	<1:1	1:1	1:2	1:4	1:8	1:16	1:32	+(Ins.)	Total
T.P.I. positive	17	4	6	3	1	1	0	13	45
T.P.I. negative	37	3	11	18	5	4	1	36	115

Probable biological false positive reactions as shown in Tables V, VI and VII are calculated at 44.5%, 56.2% and 71.8% respectively. The incidence of probable biological false positive tests for syphilis has been reported by Nelson,¹² who found 42.5% negative T.P.I. tests in a group of 496 untreated cases, the Kahn flocculation being the standard test employed; Moore and Mohr¹³ have reported 43% negative T.P.I. tests in a group of 300 patients showing reaction to such tests as the Kolmer, Eagle, Kahn, Kline;

Harrell¹⁴ has reported over 70%, using the Kahn verification test in a restricted study.

TREATED CASES

As previously mentioned, specimens were received from treated cases of syphilis, in the hope that the result might support the original diagnosis.

TABLE VIII.

S.T.S. AND T.P.I. RESULTS IN 492 TREATED CASES						
Pres. Kahn	+	+	+	—	+	—
Standard Kahn	+	+	+	—	+	—
Kolmer	+	+	+	—	+	—
Wassermann	+	+	+	—	+	—
T.P.I. positive	197	28	47	5	46	36
T.P.I. negative	21	2	21	2	11	76
						Total
						359
						133

In a comparison of Table VIII with Table III (untreated cases), it will be noted that the 21 cases of negative T.P.I. with positive S.T.S. represent 10.8%; this figure falls within the biological false positive percentage in untreated cases. It is exceedingly doubtful whether any of these patients ever had syphilis, but one cannot eliminate the possibility of the biological false positive reactor contracting the disease. It is certainly within the realm of possibility that this situation could account for some of the "fixed" reagin levels following many courses of adequate treatment.

Although the evidence is inconclusive, it is doubtful whether all the patients with negative S.T.S. and negative T.P.I. actually suffered from syphilis at some time; while early treatment of primary and secondary syphilis could lead to the decline in both S.T.S. and T.P.I. titres to below detectable levels, this cannot account for the total.

Treated cases are being investigated by several clinics where more complete histories and adequate records are available. This may throw some light on the trend of the T.P.I. antibodies following adequate treatment.

ANALYSIS AND DISCUSSION

From the above tables it will be seen that the T.P.I. test is an invaluable aid in resolving the problem cases, in the diagnosis of a syphilitic infection. However, because of the intricacies of the test, it must be reserved for those cases meeting the requirements laid down by the Provincial Venereal Disease Control Offices. Following up treated cases of syphilis with T.P.I. tests is of

little value, because the antibodies appear to remain detectable over a much longer period than "reagin" although these antibodies may disappear, depending upon the stage at which treatment is instituted. The diagnosis of primary syphilis by means of the T.P.I. test is also variable because of the time taken for the formation of detectable antibodies. In the diagnosis of latent syphilis the test is invaluable.^{17, 18}

Also of great practical value is the use of the test at prenatal examinations, where time does not permit adequate follow-up by standard methods to confirm the diagnosis of syphilis. It should also be noted that cord blood specimens from known adequately treated syphilitic mothers show that the antibody can pass through the placental barrier but, as in the case of any passive transfer of antibody, they disappear within a short period of time. In our experience on a few cases this appears to be within the fourth to sixth month period; this agrees with the findings of Miller *et al.*,¹⁵ who in specific larger study found disappearance of antibody after a seven-month period.

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RÉSUMÉ

L'épreuve d'immobilisation du tréponème pâle est le résultat des travaux de Nelson et Mayer. Le Ministère de la Santé de la Province d'Ontario l'adopta en 1951 et offrit ses services l'année suivante aux médecins de tout le pays, moyennant certaines conditions énumérées dans le texte. L'intérêt de cette épreuve réside en ce qu'elle peut apporter des précisions dans les cas où les tests de Kahn et Kolmer sont douteux. Les auteurs décrivent en détail les différentes préparations employées au cours des opérations menant à l'immobilisation du spirochète. Les anticorps qui sont à la base de la réaction d'immobilisation semblent demeurer perceptibles pendant beaucoup plus longtemps que ne l'est la "réagine", bien qu'ils puissent disparaître si le traitement a été institué très-tôt au cours de l'infection. Il faut donc attendre que ces anticorps soient formés avant de chercher à appliquer le I.T.P. L'épreuve s'avère d'une importance inégale dans le diagnostic de la syphilis latente et dans l'examen prénatal.

M.R.D.

Case Reports

THECOMA OF THE OVARY PRODUCING MEIGS'S SYNDROME*

PETER ENNS, M.D., Winnipeg, Man.

SINCE THE FIRST RECORDED (post mortem) description in 1879 by Cullingworth of a case of bilateral ovarian fibromas with ascites and bilateral pleural effusion,¹ approximately 95 case reports have appeared to date in the literature of this tetrad: (1) utero-adnexal neoplasm; (2)

ascites; (3) hydrothorax; (4) remission of signs and symptoms after removal of the tumour.

In the earlier literature, cases were restricted to fibromas of the ovary, but later other benign ovarian and uterine neoplasms¹ were included, and even malignant tumours of the ovary where there was no demonstrable evidence of metastases and yet the above syndrome was reproduced. In the Canadian literature, only two cases have been reported to date as far as could be determined.^{2, 3}

While the history of the syndrome dates back many years, it is well known that its full significance was realized only after the classical paper in 1937 by Meigs and Cass.⁴ In view of its amenability to surgical treatment, it is important that the syndrome be kept in mind in the differential diagnosis of cases of ascites and pleural effusion,

*From the Department of Obstetrics and Gynaecology, Winnipeg General Hospital, Winnipeg, Man.

in order that treatment is not withheld on the assumption that the case is one of inoperable malignant or other disease.

An analysis of 65 cases shows the following pathological findings: fibroma 36, cystadenocarcinoma 7, pseudomucinous cystadenoma 5, uterine fibromyoma 5, teratoma 3, thecoma 3, granulosa cell tumour 3, ovarian fibromyoma 1, Brenner tumour 1, Krukenberg tumour 1.

With the comparative paucity of case reports in mind, especially those in which the pathological diagnosis was thecoma, it was thought desirable to report the following case.

Mrs. J.F., age 51, 2-gravida, 2-para, Chinese, was admitted to hospital on February 9, 1954, with swelling of abdomen (4 months), pain in the right lower quadrant (2 months), and swelling of the vulva (2 months).

The patient had been perfectly healthy until the end of November 1953, when she began having dull aching pain in the right lower quadrant. There was no radiation of the pain. It was not steady, was increased by strain and was mildly relieved by aspirin. There was no association with any body function. During this same period the patient noticed that her lower abdomen was becoming larger and harder. The mons and vulval tissues had recently become markedly swollen. There was no noticeable swelling of her ankles. She developed frequency and nocturia but no dysuria or stress incontinence was present. Review of systems was negative except for the above and some slight loss of weight.

The past history was completely non-contributory, the patient having never seen a doctor until the present illness.

Menstrual history: Menarche at 15, interval 28 days, duration 5 days, no pain, moderate flow; regular until May 1953, then amenorrhoea until November 1953 and again up to the time of admission.

The chest showed evidence of effusion on both sides, more marked on the left side. The abdomen was protuberant; on palpation there was a solid, irregular lower abdominal mass rising out of the pelvis and extending almost to the umbilicus. It was slightly mobile. There was a suggestion of fluid in the abdominal cavity. The cervix pointed down and was smooth and soft. Body was acutely anteverted and pressed on by an abdominal mass which dipped slightly into the right fornix. The fornices were otherwise free. Inspection showed normal cervix and healthy mucous membrane. The blood showed W.B.C. 14,500 with normal differential; Hb. 15.6 gm.—100%; R.B.C. 5.4 million; E.S.R. 35; cell volume 50%, albumin 4.1; globulin 3.5. Urine had 4-6 pus cells. Pleural fluid contained no tumour cells; specific gravity 1.021; protein 4.5 gm. %. Ascitic fluid was of sp. gr. 1.018 with protein 3.5 gm. %.

Intravenous pyelogram showed a large soft tissue mass arising out of the pelvis and extending up to the level of L 2. No evidence of fetal parts. Right kidney showed some slight dilatation of pelvis and calices. No evidence of ureteral obstruction.

Barium enema: "The colon fills readily to the caecum. The bowel is displaced upward and somewhat laterally by a large soft tissue mass arising out of the pelvis. There is no evidence of an intrinsic lesion involving the large bowel."

Chest radiograph on February 7 showed a bilateral pleural effusion, more marked on the left side.

On February 12 a thoracentesis was done and 500 c.c. of straw-coloured fluid removed from

the left pleural cavity. Another thoracentesis was done on February 15, when 980 c.c. was removed from the left side and 500 c.c. from the right.

A laparotomy was performed on February 16, with a preoperative diagnosis of ovarian tumour and Meigs's syndrome. The right ovary was greatly enlarged by a solid and cystic neoplasm. There was some free fluid in the abdomen but no adhesions. The uterus and left ovary were normal in appearance. The right ovary and appendix were removed.

Pathological report.—Specimen consists of right ovarian tumour measuring 19 x 16 x 7 cm. and weighing 1,370 gm. The external surface was covered by intact opaque tunica with scattered areas of yellowish-blue. At the site of attachment of the oviduct the surface is roughened and haemorrhagic. The fimbriated end of the oviduct is present, measuring 2.5 x 0.7 cm. and showing no gross abnormality. On section, specimen shows a solid, firm, fibrous, predominantly yellow tumour with multiple areas of cystic degeneration. These cystic spaces contain yellowish clear fluid and measure up to 6.5 cm. in diameter. The microscopical examination shows thecoma.

The patient had an uneventful postoperative course. A chest radiograph on February 19 was reported as follows. "Bilateral pleural effusions are again noted but these have decreased considerably since the last examination. Free gas is also shown beneath both diaphragms, presumably the result of abdominal surgery. No evidence of atelectasis has been demonstrated." On examination on February 25, there was no clinical evidence of any residual effusion. She was discharged on February 28.

SUMMARY

A case of Meigs's syndrome due to a thecoma of the right ovary is presented. The tumour was removed at operation and the patient had an entirely satisfactory postoperative course.

I am indebted to Dr. Elinor F. E. Black for permission to publish this case.

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A CASE OF SCLERODERMA WITH L.E. CELLS AND PROLONGED REMISSION ON CORTISONE THERAPY*

ROBERT VOLPÉ, M.D.† and
JOHN T. HAUCH, M.D., Ph.D.,‡ Toronto

A CONTROVERSY currently exists regarding the specificity of the L.E. cell phenomenon for disseminated lupus erythematosus. The L.E. cell may be defined as a polymorphonuclear leukocyte containing a large homogenous inclusion body which is stained with basic dyes and is Feulgen-positive. In the experience of a number of observers, the L.E. cell is apparently specific for disseminated lupus erythematosus and not found in other conditions, including the allied collagen diseases.¹⁻¹¹ However, evidence is now accumulating that the specificity of the L.E. cell is not complete, and that conditions other than disseminated lupus erythematosus may be associated with the phenomenon. The L.E. cell has been observed in hæmolytic anæmia,¹² multiple myeloma,¹³ leukæmia,¹⁴ miliary tuberculosis,¹⁵ pernicious anæmia,¹⁶ dermatitis herpetiformis,¹⁶ severe penicillin reactions,¹⁷ and some cases of diffuse systemic rheumatoid disease.¹⁸ The actual correlation of the L.E. cell with disseminated lupus erythematosus is undoubtedly high, but it would appear that more experience with the test is necessary before a complete evaluation of the significance of the L.E. cell is reached.

Evidence has been advanced that many of the collagen diseases bear a relationship to the hypersensitivity state,^{19, 20} and thus the difference between the various collagen diseases may be in part a matter of degree rather than actual structural changes. If this is correct, further search for L.E. cells in collagen diseases other than disseminated lupus erythematosus, and also in hypersensitivity states, may be productive in at least a few of the cases.

The demonstration of the L.E. phenomenon in the case of scleroderma described below suggests that this viewpoint may be worthy of further consideration.

CASE REPORT

Mrs. G.B., a 28-year-old white woman, has been followed both as an in-patient at St. Joseph's Hospital, Toronto, and as a private out-patient of one of the authors, for several years. She was in fairly good health until the age of 21. She stated that she had had intermittent bouts of eczema since infancy, and sinusitis and bronchitis since childhood. Then in February 1945 (at age 21) she gradually developed hoarseness, as well as pain, stiffness, and limitation of movement in the knees, ankles, wrists, shoulders and fingers. The skin of her hands and feet became thin, glazed, dusky and reddish blue in colour. She also developed anorexia, weight loss, malaise, fatigue, and occasional paroxysmal tachycardia. Her hands would become pale and painful on exposure to cold. She was finally admitted to hospital in January 1946.

On physical examination on that first admission, significant findings were as follows:

The skin of the hands and feet was thin, glazed, and taut over the subcutaneous tissues, with a reddish-blue hue in these areas. The feet appeared puffy. The skin of the remainder of the body was normal and unaffected, and there was no facial rash. The metatarso-phalangeal joints of both great toes were tender, painful and swollen. There was painful limitation of movement of the small joints in both feet, and of the ankles. Both wrists were stiff and painful, with marked limitation of movement in the small joints of the fingers. Numerous tender nodular swellings were noted along the course of the long tendons. The knees, shoulders and elbows did not appear to be involved clinically at that time. There was no lymphadenopathy, and neurological examination was negative.

Admission temperature was 98.4° F. Leukocyte count 8,000, hæmoglobin value 78%, E.S.R. 25 mm. in one hour. Fasting blood sugar 81 mgm. per 100 c.c. The intracutaneous tuberculin (O.T.) test was negative.

Laryngoscopic examination revealed atrophy and induration of the vocal cords. Roentgen examination of the right hand demonstrated moderate decalcification of the bones, but no proliferative or destructive lesions. The joint spaces appeared normal. Biopsies were taken of the skin of the left hand, and of a nodule in proximity to a tendon. Sections through the peritendinous nodule showed dense fibrous tissue, with fibrinoid necrosis in the central area. Towards the periphery were small clusters of large cells having the appearance of an Aschoff nodule. The appearance was that of a chronic inflammatory reaction, and was interpreted as resembling that of rheumatoid nodules. Sections through the skin showed atrophy of the epithelium and collagenous thickening of the corium. The appearance was compatible with a diagnosis of scleroderma.

The patient was in hospital for seven weeks on that occasion. She was given a course of penicillin without avail, and was afebrile throughout her stay.

After discharge from hospital, the patient was allowed to return to secretarial work, although greatly restricted in her activities. She continued to have unabated malaise and fatigue. In December 1948 (age 24), she developed coryza and sore throat, and then rigors, feverishness, anorexia, diarrhoea, crampy abdominal pains, and a frequent cough productive of moderate amounts of mucoid sputum. She was readmitted to St. Joseph's Hospital two weeks later. On admission she was acutely ill, flushed, markedly dyspnoeic and cyanotic. Her posterior pharynx was injected. Movements of the chest were not impaired, and resonance and fremitus were normal throughout. Diffuse fine rales were heard throughout both lung fields. The cardiovascular system appeared normal, but the apex rate was 120 and regular. The abdomen was slightly distended, but the remainder of the findings were as above described.

She ran a "spiking" temperature as high as 105° F. for 48 hours after admission, and was thereafter afebrile. Penicillin therapy was instituted on admission, and continued for two weeks.

*From the Department of Medicine, St. Joseph's Hospital, Toronto.

†Senior Intern in Medicine, 1951-52, St. Joseph's Hospital, Toronto.

‡Physician-in-Chief, Department of Medicine, St. Joseph's Hospital, Toronto.

Laboratory investigation then revealed a leukocyte count of 8,600, haemoglobin value 82%, red cell count 4,000,000, erythrocyte sedimentation rate 98 mm. in one hour on admission and 76 mm. two weeks after admission (day of discharge). Her urinalyses were negative.

She continued to do poorly after discharge, with gradual loss of weight, weakness, malaise, fatigue, anorexia, abdominal cramps, and polyarthralgia and did not return to work. In October 1949, she attended the Mayo Clinic, Rochester, Minnesota, where a sternal bone marrow aspiration revealed L.E. cells in large numbers. On that basis, a diagnosis was there made of disseminated lupus erythematosus despite the absence of cutaneous signs, leukopenia, or anaemia. Roentgen examination of the chest at that time revealed only a Ghon lesion on the left, and radiographs of the hands, elbows and knees showed osteoporosis only.

soon objective as well. The pain in affected joints became greatly diminished within two days, and the range of movement of these joints increased. She became active, and walking caused her little distress.

On this therapy, her sedimentation rate dropped to 30 mm. in one hour 12 days after starting therapy, and to 22 mm. in another 10 days. On December 9, 1950, her total protein was 7.52, albumin 3.55, globulin 3.97 gm. %. Her haemoglobin value had risen to 90%, and her leukocyte count had decreased to 12,200.

She was discharged on December 15, 1950, and has been maintained on 75 mgm. cortisone daily orally, and a low-sodium diet. She continued to improve, gained weight, and returned to a vigorous active life. The skin manifestations improved considerably over a period of a few months. Slight limitation in movement of the previously affected joints persisted, but this was not incapacitating. In January 1951, she fell and suffered a

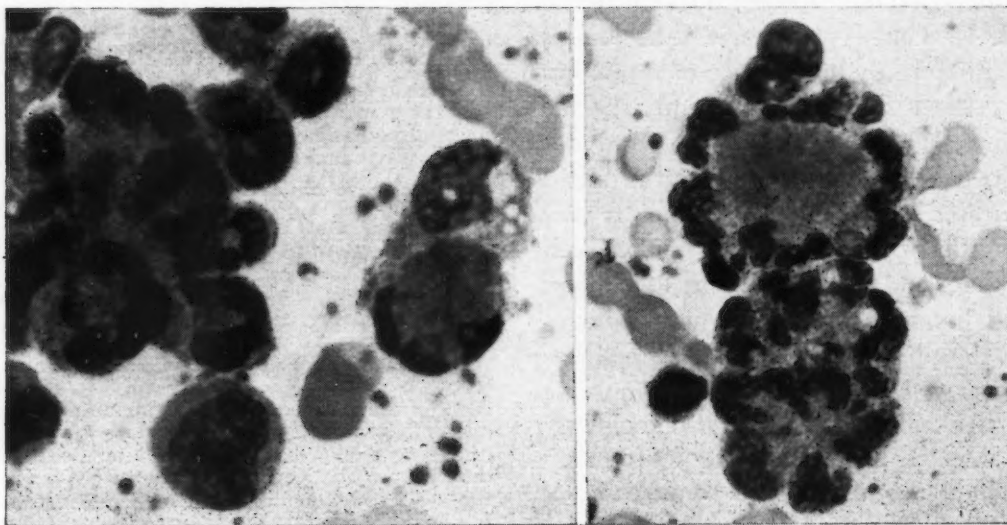


Fig. 1

Fig. 1.—L.E. cells in patient's bone marrow.

Fig. 2

Fig. 2.—Rosette from the same bone marrow preparation.

After returning home from this visit, she confined herself to bed most of the time. On November 11, 1950, she was again admitted to St. Joseph's Hospital because of the gradual progression of her disease. She had lost 28 pounds in the last two years before admission (from 120 to 92 pounds). In addition, for 18 months before admission, she had been experiencing severe night sweats, intermittent periods of feverishness, and stiffness of the back and neck. Physical findings were essentially unchanged, except that she was very pale and appeared more severely ill than previously.

Laboratory investigation revealed a haemoglobin value of 70%, red cell count 3,400,000, and leukocyte count 16,700 with differential count: neutrophils 71, lymphocytes 24, monocytes 3, eosinophils 2. Total eosinophil counts were performed daily, and varied from 145 to 900 per c.mm. Erythrocyte sedimentation rate was 110 mm. Total protein 9.40 gm., albumin 3.68 gm., globulin 5.62 gm. %. Determinations were repeated several times with little variation. Urine was normal, except for occasional traces of albumin.

Another biopsy of skin was taken; the sections revealed slight atrophy of the epidermis, and the corium underlying the epithelium showed thickening and slight fibrinoid degeneration. The blood vessels showed no evidence of inflammatory reaction. A sternal bone marrow smear again revealed great numbers of L.E. cells (Figs. 1 and 2).

On November 15, 1950, the patient was started on cortisone acetate 200 mgm. daily orally, and two days later this dosage was decreased to 100 mgm. daily. There was immediate marked improvement, first subjective and

fracture of the left lateral tibial condyle but made an uneventful recovery.

She was married in May 1951, and in the spring of 1952 was delivered of a normal baby without complications. At the present time (March 1954) the patient continues to enjoy good health and weighs 134 pounds.

Involvement of the interphalangeal joints of both hands persists and is typical of rheumatoid arthritis, but despite moderate deformity of the fingers there is good function. Her blood pressure is 136/85. L.E. cells are still demonstrable in large numbers. The serum protein values have returned to normal.

The case is considered to be one of scleroderma, showing L.E. cells.

DISCUSSION

The clinical manifestations of this patient's disease are most compatible with the diagnosis of scleroderma. The skin had the characteristic dull, glazed reddish-blue sheen, was taut, and could not be lifted from underlying tissues. Raynaud's phenomenon, as observed, is a frequent feature of this condition. The indurated vocal cords, the arthritis, and the pulmonary involvement are all compatible with this diagnosis. The microscopic examination of the skin specimen added further

confirmation. Thus, despite the demonstration of L.E. cells in the bone marrow and the presence of some signs and symptoms (arthritis, fever, pulmonary involvement) common to many of the collagen diseases, the clinical picture did not resemble that of disseminated lupus erythematosus. The absence of leukopenia, anaemia, or the usual cutaneous involvement characteristic of disseminated lupus erythematosus is in keeping with this view. The case is therefore considered to be one of scleroderma exhibiting the L.E. phenomenon, and is another example of the occurrence of L.E. cells in a collagen disease other than disseminated lupus erythematosus.

The beneficial effect of ACTH and cortisone in the treatment of the collagen diseases has been reported by numerous investigators. There are relatively few reports of the efficacy of these agents in scleroderma,²¹⁻²⁶ but these indicate that the condition may be improved by either drug, and its progression retarded. This patient, however, has been maintained in a state of remission on cortisone therapy since November 1950. Since the clinical course previous to therapy had been steadily downhill, the possibility of a prolonged spontaneous remission appearing coincidentally with therapy seems unlikely. This remission has occurred without any of the complications of prolonged cortisone therapy. It may be concluded that with judicious therapy at least some patients may be maintained in a state of remission for an indefinite period.

SUMMARY

A case of scleroderma is presented showing L.E. cells, in which cortisone therapy induced a prolonged remission. This is another example of the demonstration of the L.E. phenomenon in a disease other than disseminated lupus erythematosus.

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SURGICAL TREATMENT OF AORTIC INSUFFICIENCY

J. A. GRAVEL, M.D., F.R.C.S.[C.], M.S.,
Quebec

ONLY RECENTLY has surgical correction been used for this vascular deformity. In May 1954, an article appeared¹ reporting on the first 23 cases. In this report, it was clearly stated that the operation was performed in advanced cases. We would like to report a case of aortic insufficiency which we treated successfully by operation, using a Hufnagel valve.

CASE HISTORY

M.G., a young man of 17, first consulted us a year ago for a heart condition of long duration. At that time a diagnosis of aortic insufficiency was made. The patient was told to come back in a year's time, when possibly some type of surgery could be undertaken. Since then, he went into cardiac failure twice and nearly died. There was a definite history of rheumatic fever at age 9. Since that time, the boy had been admitted to various hospitals on an average of four times a year. He states that every admission was necessary because of episodes of pain, starting at the epigastrium and radiating to the cardiac region in a vise-like manner.

Upon examination one first noted the very strong thrust of the heart in the apical region, in this case in the left 7th interspace. With each heartbeat the whole left hemithorax seemed to lift from the bed. The carotids were pulsating strongly. Even the axillary and brachial arteries could be seen pulsating vigorously. Auscultation revealed a loud double systolic-diastolic murmur, best heard in the aortic region. The mitral area was examined carefully and it was found difficult to say whether a diastolic murmur existed or not. The blood pressure in the arms and in the legs was at the top of the manometer; it may well have been over 300 mm. Hg. The diastolic pressure was zero. Pistol shots were heard all over the arterial system. In view of the gradually de-

*From the Department of Thoracic Surgery, Hôtel-Dieu, Quebec City.

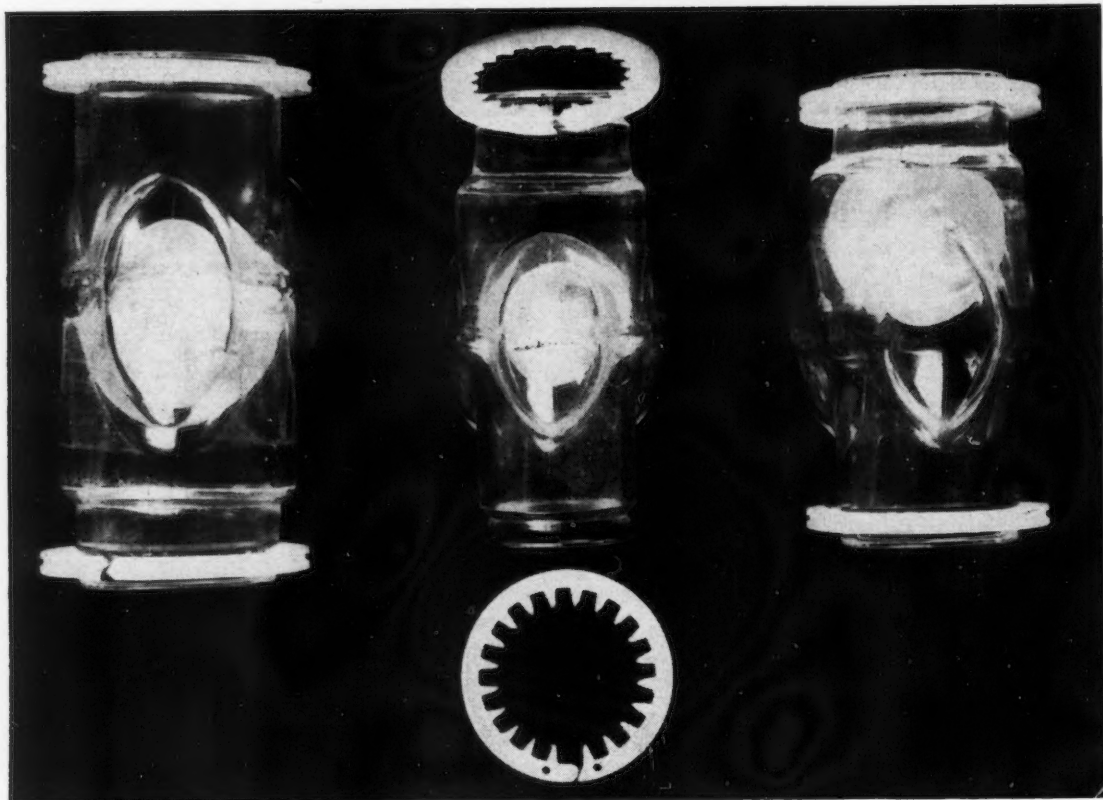


Fig. 1.—Three Hufnagel valves. The ball can be seen in different positions. The multiple point fixation plastic ring can be seen, with its two small holes. In both lower extremities the groove in the ring may be seen.

teriorating state of the patient, it was decided to insert a Hufnagel valve.

Operation.—Under general anaesthesia and refrigeration (Dr. Fernando Hudon), the left chest was entered through the bed of the 5th rib. The descending aorta was mobilized over a distance of about three inches, starting immediately past the origin of the left subclavian. The heart was so large that intrathoracic manoeuvres were difficult. The aorta was clamped above and below and transected. The smallest of the four Hufnagel valves (Fig. 1) was inserted. The plastic rings were closed over the aorta with a nylon thread (Mersilene), reinforced by a No. 00 stainless steel suture passed through the small holes in the rings. The clamps were released, and the sound of the valve opening and closing was immediately heard. A large piece of Gelfoam was placed behind the valve, and the pleura closed in front of it. The mitral valve was next explored via the left auricular appendage, and found to be normal in all respects. The chest was closed in the usual manner with underwater drainage.

Postoperative course and discussion.—Refrigeration was used in this case. It had been hoped that the temperature would be brought down to 85° F., but because of a technical error the temperature did not fall below 90° F. The total clamping time was 33 minutes. The postoperative course was essentially normal. For a few weeks the patient complained of bouts of palpitations, which were much the same as those experienced preoperatively. A week after operation his legs became painful, with disappearance of the knee reflexes, but he was able to stand and walk throughout. After ten days of massage and heat application the pain disappeared.

Seven weeks after operation all pain had disappeared in the legs and the knee reflexes were normal. The pistol shot sounds had disappeared over the lower body. The blood pressure was 180/00 in the arms, and 170/70 in the legs. Examination of the chest revealed a marked

diminution of the cardiac impulse. His chest had "quietened" down considerably. The double murmur was still present in the aortic region, but was much weaker. The pulsation of the carotids had diminished.

Slight congestion with pain in the liver area was observed once after operation, but this disappeared quickly with two injections of mercurial diuretics. The patient is now convalescing in the country.

We know that this operation may not be the final answer to the problem of aortic insufficiency, but we do feel with Dr. Hufnagel that it is actually worth while in advanced cases. The risk is certainly less than if we had tried to insert the valve higher in the aorta. Our patient has been greatly helped. The noise made by the valve is decreasing, but its proximity to the left bronchus makes it well heard when the mouth is open.

CONCLUSION

A case of severe aortic insufficiency is presented. The patient was operated upon and a Hufnagel valve inserted. With the body temperature at 90° F., the thoracic aorta was clamped for 33 minutes. This we feel is dangerous; either the body temperature should have been lowered to 85° F., or the valve inserted more rapidly.

The improvement from this operation cannot be as immediate as, for instance, that seen after mitral commissurotomy. The problem of filling the coronary arteries is still present. However, with time, the work being less, the heart will decrease in size. That in itself is a major achieve-

ment. We do not know whether the aortic valves should be explored at operation before deciding whether a commissurotomy should be done or a valve inserted. It would seem that, with a diastolic pressure of zero, there can be no stenosis present. Should a thrill be felt over the base of the aorta, and should the diastolic pressure be over 40, we would certainly be inclined to investigate the possibility of doing an aortic commissurotomy before inserting the valve.

Our patient was operated upon two months ago. He is much improved, and he has volunteered the information that, although he can hear the valve, it does not bother him in the least.

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MONOSPORIUM APIOSPERMUM SACC., 1911, ASSOCIATED WITH OTOMYCOSIS

F. BLANK, Dr.sc.nat., Dr.sc.techn.* and
E. A. STUART, M.D., C.M.,† Montreal

Monosporium apiospermum Sacc., 1911, the imperfect form of *Allescheria boydii* Shear, 1922,⁷ has been repeatedly isolated from mycetoma in different continents,^{1,5} and once from a mycetoma of a farmer in the Province of Alberta, Canada.^{6,9} Emmons,⁸ Ajello¹ and Ajello and Zeidberg² were able to isolate this fungus from the soil, a finding which gives support to the assumption of an exogenous source of infection in cases of mycetoma. This fungus has also been found as the causative organism of septicaemia¹¹ and meningitis.⁴ Belding and Umanzio³ have reported the isolation of an unidentified *Monosporium* species from a case of chronic infection of the ear.

The number of cases of otomycosis caused by fungi with proven pathogenicity is rather small.¹⁰

We therefore think it worth while to report the following case of otomycosis caused by *Monosporium apiospermum*.

Mr. J.H., 51 years, was first examined on February 5, 1954. He complained of weeping and crusting of the ear canals for one week. The patient had no pain in his ear, and the hearing was good. No other skin lesions could be found. There was no history of previous ear trouble. The right ear canal contained soft, dark-coloured debris which resembled that found in cases of otomycosis caused by *Aspergillus niger*. The drum was essentially normal. The entrance of the canal was swollen and excoriated. The left canal was similar to the right except that there was not so much debris present. A whitish film covered the skin of the canal, but the drum was normal. The removed debris was examined under the microscope and was found to consist mainly of long hyphae bearing ovoid conidiospores at the ends. Cultures originating from the inoculated debris were identified as *Monosporium apiospermum* Sacc., 1911, and our identification was confirmed by the Centraalbureau voor Schimmelcultures, Baarn, Holland. The ear canals were painted with Cresatin at intervals of two or three days for two weeks, when the condition resolved. It has not recurred as of July 1954.

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URETHRAL APOPLEXY

Four cases are reported in which urethral bleeding was an early symptom of malignant hypertension. In three patients such bleeding was one of the initial symptoms, and in the fourth it occurred early in the hospital course. In two of these patients the site of bleeding was apparently in the anterior urethra. All four patients had significant azotemia. It may thus be stated that such haemorrhage was observed only in association with renal insufficiency, as manifested by nitrogen retention. The findings in these patients are discussed with reference to previous literature and in connection with experimental hypertension in animals. Interestingly enough, attention was called to Goldblatt's early work in experimental malignant hypertension, in which that investigator noted bladder and urethral haemorrhages in hypertensive dogs with azotemia.

It would appear, therefore, that the occurrence of spontaneous urethral haemorrhage should draw attention to the probability of malignant hypertension.—Pascoe, S. G. and Evans, J. M.: *Am. J. M. Sc.*, 226: 533, 1953.

*Department of Bacteriology and Immunology, McGill University, Montreal.

†Department of Otolaryngology, Royal Victoria Hospital, Montreal.

Special Article

GENTLENESS IN SURGERY

PAUL WILLIAMSON, M.D.,
Albuquerque, New Mexico

MODERN SURGICAL TECHNIQUE is reaching a point of near mechanical perfection. Precision procedures have given results beyond our most optimistic dream of two decades ago. Mortality has been lowered or nearly eliminated in many diseases which were formerly regarded as universally fatal. Morbidity from disease is constantly changing for the better. In the presence of such a picture, it would seem that the only advance to be made is slow, steady progress toward betterment of surgical procedure and result. I would contend, however, that there is one tremendous and sudden advance which is available to every surgeon and which may be had for the taking. That advance has little to do with changing surgical mortality but it has much to do with altering surgical morbidity.

Remember the old saying that "familiarity breeds contempt." This seems to be true for most operators in their relationship with human tissues. The one reigning ingredient of better surgical technique is avoidance of trauma from the operation itself. *This is not accomplished* by many average operators.

I know perfectly well that every surgeon who reads this will say, "That just isn't so. I do my best constantly to avoid traumatizing a patient." As a matter of fact, that is what I said when the problem came up a half dozen years ago. Each of us, however, can take pencil and paper and prove that there are at least a hundred points in the average operation where trauma could be avoided and is not. Major "killing type" trauma is, of course, practically unheard of in surgery. It is the minor traumatic episodes, the things that make the patient uncomfortable, the trivial delays in healing and the small unnoticed insults to human tissue that cause difficulty. By no means do these small things increase mortality.

If we wish to consider surgical results in terms of eradication of a lesion without lasting after-effects, these small matters make little or no difference. On the other hand, if we wish to shorten the hospital stay and make it more pleasant for the patient, if æsthetic concepts are important and if the comfort and confidence of the patient mean as much as we say they do, then these small matters are of tremendous significance.

The mechanism involved is very simple. Injury is usually caused by excess pulling and tugging, by excess handling and by tying sutures too tight. Here are some pertinent examples:

Overstretching of a muscle in an athletic contest causes severe aching pains which may last for several days. It is not unreasonable to suppose that overstretching of a muscle in an operative procedure would cause the same thing. Bruising by undue pressure from retractors or clamps is another insult offered with universal frequency.

Thrombosis of small vessels in wound areas is, of course, an unavoidable occurrence. By gentle handling we can minimize the amount of this thrombosis and make an attempt to hold it within the narrow bounds of that necessary to engender healing. Capillary hæmorrhage into tissues (not at the site of incision) is another frequent occurrence in operative cases.

Excessive handling of the tissues supplied by the autonomic nervous system—or, for that matter, *any* handling of such tissues—sets up reflexes the nature of which we have not fully elicited. These reflexes are often and possibly always detrimental to the human organism.

Two things contribute to the high incidence of this minor trauma at the operating table. In the first place our procedures are sometimes dictated by custom rather than by common sense. That, of course, is a hard thing for the average surgeon to admit. It is the rare physician—or the rare man—who can defend his actions on the basis of having reasoned out every step and the possible consequences thereof. An excellent example may be found in military surgery.

I hasten to confess that I know nothing of war wounds and their proper handling. However, I have had an excellent instruction course by men who do know. One statement made by a high-ranking professor impressed me so much that I will never forget it. It was this: Between World War I and World War II there was practically no advance in wound surgery, for policies were dictated by those men who had achieved better than average results in World War I and who had no basis for advocating change. At the onset of World War II a group of young surgeons who didn't know the customary treatment were put into active service. Since they did not accept custom and since they had no background for the work they were doing, these men applied their knowledge of the basic sciences and worked out routines on the basis of present knowledge, completely ignoring the usual technique which they did not even know. Their results were spectacular. Using modern information and experimental technique they achieved a previously unheard-of low mortality. These same men, since they now have a dearth of material and no opportunity to make great advances in technique, will probably hold to customs which they have established until still another younger group who do not hew to customs again achieve advances. This sounds very critical, but it is not. Men who know philosophy tell me that it is a completely normal procedure for human advancement.

A second factor which contributes to trauma in the operating theatre is the tension under which the surgeon works. It is all very well for a man who is sitting in an armchair having a drink to warn us against being tense when we operate. But fortunately, most of us who operate are relatively conscientious and have a tremendous desire to perform a successful operation and benefit the patient. This desire to perform a successful operation is the cause of our concentration on the lesion present. We are often so intent upon attacking the disease that we fail to notice trivial insults which we constantly offer the tissues not directly involved in the lesion.

In the past, time has been such a major factor that we still cannot get away from the clock while in the operating theatre. Speed was once important. It is not nearly so important now. Also, we cannot help being a bit tense about bearing responsibility for everything that happens, whether a result of our own actions or the actions of others. These various tensions contribute to our tendency toward unnoticed minor trauma.

These two things, custom and tension, make it very, very difficult for the surgeon to be introspective while working and to change his technique toward an increased gentleness in the handling of tissue.

Several years ago my associates and I fell to talking about this in somewhat detailed fashion and decided to prove it. I should like to tell you of the first operation we did after having the discussion. Our subject was the simple appendectomy. We decided to plan on paper a relatively non-traumatic attempt to remove the appendix and to apply it to the next routine appendectomy. This is what happened.

Preoperative medication was limited to sedation with the barbiturates and to a dose of atropine if required. No opiates were to be given because of the possibility of vomiting which so often follows their use. The patient and the surgeon went to the operating room together and were given a few minutes to talk together before any procedure was started. No anaesthetic was administered at this time. The patient was placed on the table and the abdomen scrubbed gently for ten minutes with soap and water followed by an alcohol rinse. None of the irritating mercurial antiseptics or other such drugs was used.

Local anaesthesia was induced by injection of 1% procaine, which was the only anaesthetic until the peritoneum was reached. Only minimum quantities were used. Before injecting the skin, a spray of ethyl chloride was applied so that the patient had practically no pain sensation from the very start of the operation.

After the skin incision was made, individual bleeders underneath the skin were caught with mosquito forceps but the forceps were not tightly closed so as to crush tissue. We found that old forceps which had grown somewhat stiff would stay in position if handled carefully. Ties were

not used unless the vessels continued to bleed after being held for three or four minutes. If mechanical occlusion of the vessel was found necessary, 4-0 plain catgut was looped around the vessel and single tied.* In the first operation in which we used this technique, only one catgut tie was necessary between the skin and the peritoneum.

As dissection was continued there was *absolutely no* crushing or tearing of tissue with knife handle or finger covered with gauze. Particular attention was given to this at the upper and the lower ends of the wound. Very slow, very careful sharp dissection was used to separate the fat from the anterior rectus sheath from about $\frac{3}{8}$ inch laterally from the proposed incision in the sheath. Further anaesthetic was then injected above and below the rectus sheath, and the sheath was incised in the direction of its fibres without regard to paralleling the skin incision. It was incised, not ripped away from the muscles and torn with a pair of scissors.

Using only the gentlest of pressure, the rectus was freed from its sheath, cutting, not tearing, away any attachments to the sheath. The fingers were not inserted beside the muscle and forcibly parted. It should be possible, we felt, to avoid the horizontal tendinous insertions (tendinous inscriptions) in most cases. This was to be done if feasible.

At this time administration of nitrous oxide and oxygen was begun. Occasionally we found it profitable to use a few whiffs of cyclopropane to speed general anaesthesia. The peritoneum was opened in the usual way with one exception. It is usually possible to avoid much clamping and gross handling by peeking underneath and snipping with scissors as one goes, leaving the fingers out of the peritoneal cavity altogether. This was done.

At no time was more pressure used for retraction than approximately that necessary to slide a textbook across a smooth desk top. Try it and you will see the amount of pressure needed. Frankly, it seemed to me that it took an hour and a half to enter the peritoneal cavity in the first abdomen we opened this way. Actually, it took about twenty minutes.

After having the peritoneal cavity exposed, we STOPPED. I was not to plunge my hands in among the intestines and start fishing for the appendix. By gently moving the incision about (curare may be used) we avoided handling of peritoneal content. At this stage my associate warned me to stop and *look* for a minute to get oriented so that I could reach down and pick up the caecum with a minimum of intraperitoneal manipulation. This sounds easy but it is not simple to stop at the critical point and relax.

The caecum was held gently in rubber-jawed forceps which gripped just proximal to the base

*Since catgut swells when wet, these single ties are firmly held in place.

of the appendix while the actual amputation of the appendix was done. The appendix was tied, cut and cauterized but the stump was not inverted. This seems to be only a way of adding to intraperitoneal trauma.

On the way out, pinpoint approximation was done. The peritoneum is replete with nerve endings. To "bunch it up" with the posterior rectus sheath in a heavy suture would seem to be asking for trouble. In most cases the peritoneum and the sheath are partially separated. We finished the separation as far as convenient and tacked the peritoneum together *without tension*, using 4-0 plain catgut. Specifically, we used the smallest number of sutures possible. Three were needed.

We then used 2-0 chromic catgut to suture the posterior sheath loosely together. My associate now warned me against jerking it together so tightly that all possibility of blood supply to the suture line was removed. Of course, the suture line must be free of gaps. The anterior sheath was closed with interrupted cotton sutures tied gently, again, *not jerked together*. Skin closure was accomplished with a subcutaneous plastic suture.

The anaesthetic was so given that the patient began waking but remained drowsy at this time. Before closing completely, the tissue lateral to the incision was again injected with procaine.

When put to bed, the patient's head and feet were elevated slightly to take the stretch off muscles of the abdominal wall. If requested, narcotic was to be limited to 50 mgm. of demerol. None was requested.

This first appendectomy we did this way nearly drove me wild. It seemed to take at least three days to remove the thing. The actual time was an hour and twenty minutes. The patient was a 21-year-old girl with a swollen, pus-filled appendix. By evening she was sitting in a chair demanding food (she didn't get it) and the next morning she was in the hospital lobby talking a mile a minute when I arrived. On the fourth post-operative day she refused to stay any longer and returned to her job as a theatre usher. On the seventh day she went horseback riding. By no means did we advocate this.

During that first week I was more ill than she was. I could just see her intestines spilling out over the theatre floor or the development of a fine faecal fistula. Nothing happened. Since then we have used this maddening gentleness routine in many procedures. It takes planning and it takes almost superhuman patience in execution, but it works.

When one thinks of using this procedure, the argument of time versus technique arises. I am inclined to believe that this depends more upon the anaesthetic than upon any other factor. If you use one of the more potent and dangerous anaesthetic agents and demand deep anaesthesia for complete relaxation, time may indeed be more important than meticulous technique. We have

available, however, modern and satisfactory anaesthetic agents which will allow a great majority of procedures to be done with minimal anaesthetic damage. It will pay any surgeon to make certain that the less dangerous anaesthetic procedures are used for his operations.

This technique of gentle handling and prevention of tissue trauma can be applied to any surgical procedure. It does require a somewhat different approach than the one we have been accustomed to and it may annoy the surgeon to the point of being absolutely maddening. *But it works*. I would like to ask those of you who are interested to plan a few relatively non-traumatic operations and send me a summary of your technique and results. I believe you will be pleasantly surprised.

If one were to attempt to lay down a series of rules—which is not a good idea—these "do's" and "don't's" might be most applicable.

1. Sharply limit the retractive force used. Never have an assistant pull tissue with all his might.

2. Wherever possible, cut the tissue—don't tear it apart.

3. Reduce intraperitoneal manipulation to a bare minimum. Never plunge in like a hog into a slop bucket.

4. Approximate tissues loosely. Don't jerk them together and occlude the blood supply to the line of healing.

5. Avoid putting tension on tissues while suturing. Tension causes postoperative pain.

6. Bury a minimum amount of suture. There is little difference between ten feet of catgut tied around various structures and ten feet of catgut thrown loosely into the wound.

7. Administer a minimum amount of anaesthetic, using the modern relaxants and local anaesthetics wherever possible.

8. Place the patient in bed so that the incised tissues are not under tension.

The author is temporarily on active duty with the U.S. Army in Albuquerque. This article was written before he entered the service. Dr. Williamson may be written to at 8124 Princess Jeanne, N.E., Albuquerque, New Mexico.

COMPULSION IN MENTAL CASES

Sir Allen Daley, formerly medical officer of health to the London County Council, giving evidence on behalf of the Society of Medical Officers of Health before the Royal Commission on the law relating to mental illness and mental deficiency, in London, said:—

"The general thread running through our evidence is that we wish to do away, as far as possible, with compulsion and to try to get mental hospitals and institutions as near as possible in the same category as ordinary hospitals, where people apply to go in and come out as they want. We recognize that in regard to a substantial number of people some compulsory detention is needed, and in those cases we think it is desirable that some independent person of the judicial body should come in."—*The Times*, January 19, 1955.

Clinical and Laboratory Notes

THE ACCURACY OF GLUCOSE DETERMINATIONS IN SOME CANADIAN HOSPITAL LABORATORIES*

D. B. TONKS, Ph.D. and
R. H. ALLEN, Ph.D., M.D., *Ottawa*

IN RECENT YEARS, increased attention has been given to the accuracy of performance of various procedures in the clinical laboratory. Belk and Sunderman¹ have reported the results of a survey designed to determine the accuracy of chemical analyses in some hospital laboratories in Pennsylvania. A relatively high proportion of unsatisfactory results were obtained. Wootton and King² have observed large disagreement when samples were analysed in different hospital laboratories. The need for improvement in technical proficiency has been stressed by Shuey and Cebel.³ Evaluation studies have been conducted on different occasions in Maryland⁴ and Connecticut^{5, 6, 7} and the necessity for improvement of laboratory standards has been emphasized.

Two groups of hospital laboratories in Canada have recently participated in surveys to determine the accuracy of performance of glucose determinations. Technical details of the study are given in a separate section (Details of Surveys) and the results are presented graphically in Figs. 1 to 4. An allowable error of $\pm 10\%$ has been arbitrarily chosen and lines have been drawn at the $+10\%$ and -10% levels in each case. The majority of results of all the laboratories in Group I (Fig. 1) and of some laboratories in Group II (Figs. 2-4) fall within these limits.† Other laboratories in Group II show marked deviations; the results of some are uniformly high and others show a wide range of discrepancies. Of the 650 determinations performed by this group, 261 or 40.2% are in error by more than 10%. In a number of laboratories in both groups, one or more results show an extreme deviation from the accepted value.

What are the reasons for the large discrepancies in results?

First of all, if the tools are not up to par one cannot do the job. For accurate results, the reagents used in the analytical procedure should be of good quality. Certain ones may gradually deteriorate on standing, especially if stored under unsuitable conditions. Glassware of proper

dimensions and quality should be used. If, for example, the sample to be analysed is measured with a pipette of insufficient accuracy, one cannot hope to obtain a correct result. Dirty apparatus may be a cause of discrepancies. Photoelectric colorimeters (photometers) are now used in many laboratories and these instruments, if not in proper working order or if not furnished with a stable power supply, will give inaccurate readings. Some workers depend implicitly upon the calibration curves which were prepared for the photometer at the factory. Obviously, these calibration curves were prepared with reagents of a certain standard quality; probably slightly different techniques would also be used. One should not depend upon any calibration curve or table of calibration values without including a standard solution whenever a given analysis is performed. In this way, any deviation from the calibration values may be detected and, if it is great enough, the technician should look for the cause.

Secondly, the analysis must be performed with precision and care. In many laboratories, analytical procedures are conducted, often without supervision, by a technician with a minimum of training in chemistry. With inadequate knowledge, she (or he) may feel obliged to keep up with the requests of the physicians in an era when clinical chemistry is coming more and more to the fore. Moreover, in the small hospital the technician has other duties to perform (bacteriology, hæmatology, etc.), and the time available for analytical procedures may be inadequate.

Technical proficiency and accuracy in the clinical laboratory can be improved in a number of ways. For the individuals who are not trained as chemists, much can be done by supplying written procedures with detailed instructions which have been prepared by qualified chemists. If these procedures are followed exactly, many pitfalls will be avoided. A standard solution should be included whenever an analysis is performed. Such solutions might be purchased from a supply house or distributed from a central laboratory. Improvement in technical proficiency can be achieved through refresher courses conducted by qualified chemists. Such training might be supplemented by the help of travelling instructors who could check work-proiciency in the technician's own laboratory. Surveys like the ones described in the following section are helpful. They might be conducted on a reduced scale with one or more unknowns distributed at regular intervals. Accuracy is elusive and must be constantly sought after, and any programme which is established should be on a continuing basis.

DETAILS OF SURVEYS

Group I Laboratories.—There were seven laboratories in this group and each received 30 samples for analysis. These samples were made from an accurately prepared stock solution of glucose by volumetric procedures, using 0.25% benzoic acid as a diluent. In terms of equivalent concentrations in whole blood, the samples varied from

*From the Laboratory of Hygiene, Department of National Health and Welfare, Ottawa, Canada.

†It should be noted in passing that initial steps to improve technical proficiency had already been taken with some of the participating laboratories of Group I.

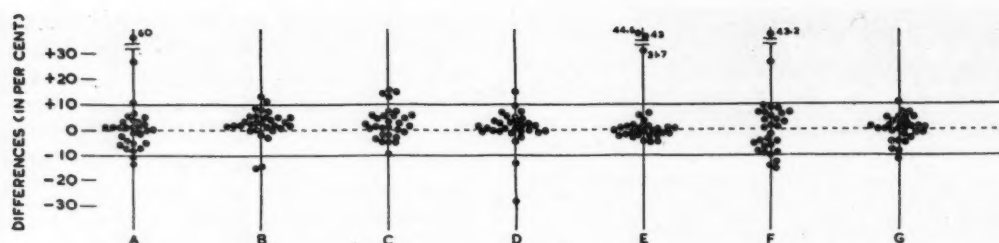


FIG. 1.—GROUP I LABORATORIES (A-G) — THE DOTS REPRESENT GLUCOSE SOLUTIONS. THE RESULTS OBTAINED IN THE DIFFERENT LABORATORIES ARE PRESENTED AS DIFFERENCES (IN PER CENT) FROM THE TRUE VALUES.

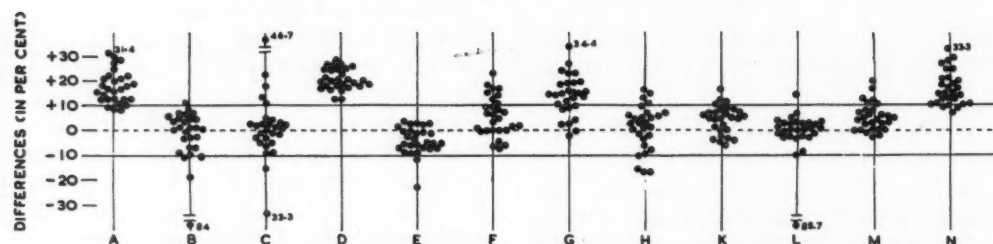


FIG. 2.—GROUP II LABORATORIES (A-N) (FIRST PHASE) — THE DOTS REPRESENT GLUCOSE SOLUTIONS AND INDICATE DIFFERENCES (IN PER CENT) FROM THE TRUE VALUES.

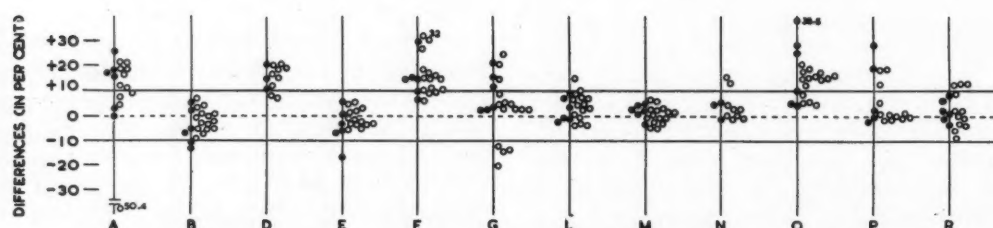


FIG. 3.—GROUP II LABORATORIES (A-R) (SECOND PHASE) — THE CIRCLES REPRESENT PROTEIN-FREE BLOOD FILTRATES AND INDICATE DIFFERENCES (IN PER CENT) FROM VALUES OBTAINED AT THE LABORATORY OF HYGIENE. THE DOTS REPRESENT GLUCOSE SOLUTIONS DISTRIBUTED AT THE SAME TIME.

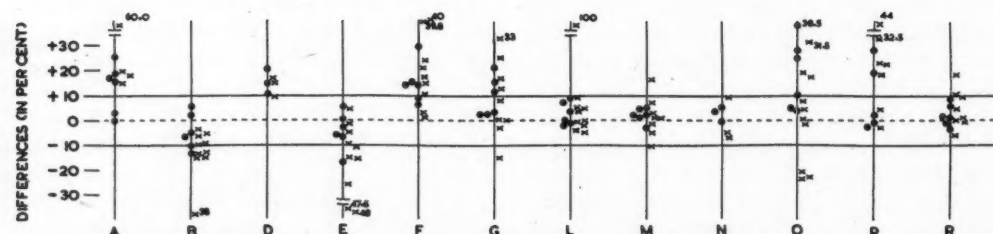


FIG. 4.—GROUP II LABORATORIES (A-R) (SECOND PHASE) — THE X'S REPRESENT SAMPLES OF BLOOD AND INDICATE DIFFERENCES (IN PER CENT) FROM LABORATORY OF HYGIENE VALUES. THE DOTS REPRESENT GLUCOSE SOLUTIONS DISTRIBUTED AT THE SAME TIME.

44 to 700 mgm. %. All samples were checked by the Folin-Wu method⁸ for the determination of glucose. They were then placed in 20-ml. screw-capped bottles (10 ml. in each) and sets of five were distributed twice each week for three weeks. A different numbering system was used for each laboratory, although at the end of the three weeks aliquots of the same samples had been sent to all. Unused portions were returned to the Laboratory of Hygiene for reference in case of unexplained discrepancies.

Group II Laboratories.—In the first phase of this survey, accurately prepared glucose solutions were sent to 12 laboratories (November 1952). In June 1953 and again in September of the same year, whole blood samples and protein-free blood filtrates as well as glucose solutions were distributed (second phase). Nine laboratories participated in both phases—three dropped out in the second phase and three new ones took part.

First phase.—Solutions with a wide range of concentrations were prepared from a stock solution as described for Group I and 30 samples were distributed to each

laboratory over a period of six weeks. Values were not reported by all participants on two samples with relatively high concentrations of glucose (604 and 700 mgm. %) and these have not been included in Fig. 2. A different numbering system was used for each laboratory.

Second phase.—A total of 10 whole blood samples, 15 protein-free blood filtrates and 6 glucose solutions was distributed. Blood specimens were obtained each Friday morning with 30-ml. syringes and transferred to sterile glass-stoppered Erlenmeyer flasks containing an anti-coagulant-preservative mixture (fluoride-thymol-oxalate).⁹ Specimens distributed as whole blood were placed in small sterile screw-capped bottles in 1.5-ml. amounts. Protein-free filtrates were prepared as soon as possible after the blood had been drawn and were placed in screw-capped 10-ml. bottles in 4.5-ml. amounts. Glucose solutions were prepared as in the first phase. The samples for each laboratory were packaged and placed in the refrigerator until just before they were sent off.

Shipments were timed to reach the various participating laboratories on Monday of each week. An extra

set of samples was sent to one laboratory to be returned to the Laboratory of Hygiene on arrival. In this way it was possible to determine the stability of the samples when subjected to the conditions of shipping. Two sets were kept at the Laboratory of Hygiene, one being stored in the refrigerator at 5°C. and one kept at room temperature. These were analysed on Tuesday of each week. All laboratories used the Folin-Wu method.

RESULTS

The results obtained on the glucose solutions by the various laboratories are presented (Figs. 1-4) as percentage differences from the true values, which are based on the weighing and dissolving of pure glucose in an exact volume of solvent. With both protein-free blood filtrates and whole blood samples, the values reported by the participants are presented (Figs. 3 and 4) as percentage differences from values obtained at the Laboratory of Hygiene. In assessing the results of studies of this kind, one is confronted with the problem of what is a practical allowable error. In Figs. 1-4, solid lines have been drawn at the +10% and -10% levels. These limits are generous, especially in the treatment of results obtained in the analysis of glucose solutions and protein-free filtrates.

An indication of the precision and accuracy of the Folin-Wu method can be obtained by results from this laboratory.⁸ One standard glucose solution and five protein-free filtrates were analysed together by four different operators on two occasions. The mean value obtained for the standard was the same as the true value and the average deviation was 1.51%. For the filtrates, the average deviation from the mean values was 1.86%. Ninety-six per cent of the results were within $\pm 4\%$ of the mean values and all were within $\pm 10\%$. It is certain that still better results would have been obtained if each operator had prepared his own calibration curve. The large deviations found must therefore be due to avoidable errors.

Group I Laboratories.—Results of this survey are presented in Fig. 1. Taking Laboratory A as an example, each dot represents a glucose sample. Twenty-five of the 30 results reported are within $\pm 10\%$ of the true values and 28 are within $\pm 20\%$. In one sample the percentage difference from the true value is +60, and in another it is +27.5. Results reported by the other laboratories have been treated similarly. Considering this group as a whole, about 87% of these results are within $\pm 10\%$ of the true values. Some of the relatively large discrepancies appeared with samples at the extremes of the range of concentrations. An equal number, however, appeared at concentration levels which might be encountered frequently in routine work.

Group II Laboratories.—Glucose solutions were distributed in the first phase of this survey and the results have been converted to percentage differences from the true values and are presented in Fig. 2. The results of about one-half of the participants are relatively good, the majority

of samples lying within the $\pm 10\%$ limits. The remainder of the group tend towards high values, some excessively so. Here again some extreme discrepancies (such as -84%, -85.7%, and +46.7%) are seen.

Results of the second phase are given in Figs. 3 and 4. In Fig. 3 the circles represent protein-free blood filtrates and the dots represent standard glucose solutions which were distributed at the same time. The latter are also included in Fig. 4 along with the whole blood specimens which are represented by X's. Certain laboratories did not participate in the first part of the second phase. Tendencies towards high results are seen, as in the first phase, although in some instances there is improvement. It is interesting to note that there is a fair degree of consistency between results obtained with filtrates and whole blood samples and with standard glucose solutions examined at the same time.

It has been noted that in the second phase of this survey an extra set of samples was sent to one laboratory to be returned to the Laboratory of Hygiene on arrival. A certain amount of deterioration had occurred in the returned whole blood samples (maximum drop in blood glucose level of 7%). It must be remembered, of course, that these specimens were on the road approximately twice as long as the others. Nevertheless, slight drops in blood sugar levels may have occurred prior to analysis in the various laboratories and one should remember this fact when considering the results in Fig. 4. The protein-free blood filtrates and the glucose solutions were found to be absolutely stable during shipment.

SUMMARY

1. The accuracy of performance of glucose determinations has been assessed in two groups of hospital laboratories. The results indicate that in many of these laboratories there is a definite need for improvement.

2. Various measures to improve technical proficiency in the clinical laboratory are discussed.

The authors are indebted to Miss Deborah E. Haight for the preparation of the charts.

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(Information regarding contributions and advertising will be found on the second page following the reading material.)

Editorials

MEDIATION COMMITTEES

Recent magazine articles, such as the recent *Saturday Evening Post* one on the work of a Californian Committee, have stressed the importance of committees established by medical associations to deal with complaints against doctors. These committees were first established by some state societies of the American Medical Association and were called grievances committees. More recently divisions of the Canadian Medical Association have set up similar committees, but have chosen to call them mediation committees. Whatever their name, their prime purpose is to settle misunderstandings between patient and doctor.

These committees are composed of past presidents, or senior colleagues, who have the respect of their confrères. They have the responsibility of getting the facts from the patient and the doctors; making an attempt to re-establish contact between them; educating the patient regarding the service rendered and the doctor regarding the viewpoint and economic status of the patient. Their function is to mediate and try to arrive at a settlement that is satisfactory to both parties.

The complaints have to do with many aspects of medical practice. Foremost on the list is the charge made for service rendered. Unfortunately the majority of these cases do not reach a mediation committee until court action has been threatened by a collection agency. The next most common complaint is inability to get a doctor when required. These usually come from patients who have recently moved, often where

there is not telephone service, and have not established themselves with a family doctor. By the same token the doctors in these new areas have not established an emergency call service. The remaining complaints have to do with varying aspects of a doctor's diagnostic or treatment service. Some of the complaints are that the doctor has been too radical and others that he has not been radical enough early in the treatment. One thing is common to all complaints—there is a lack of confidence between patient and doctor.

Mediation committees can render a great service if they are sincere in their approach and fair in their decisions. If they ever were allowed to become a whitewash for greedy or incompetent doctors, they would do the profession inestimable harm.

We might think of mediation committees as providing therapy for a disease process. They actually give empirical treatment based on the complaints of the patient. As medical men, we never feel we are accomplishing too much until we have found the cause and worked out a method of prevention. So it is with the complaints of our patients. We must take steps to prevent them. Some useful measures might be to:

1. Make sure emergency call services are operating efficiently in all areas and inform the public by all available means that they are in operation.
2. Write a schedule of fees that the average wage-earner can pay and make the charges for the various items in the schedule bear a constant relationship to the time and skill required in the service rendered.
3. Establish service departments for the purpose of assisting doctors in assessing the economic status of the patient and assisting the patient in appreciating the value of the service given by the doctor.
4. Educate the doctors and the public regarding the essentials of good medical care.

All of this will not in any way lessen the responsibility of the individual doctor in his daily practice. Here is the heart of the matter. Good service at reasonable cost, competence in the work attempted, a practice always covered during absence, regular billing of accounts, a deep and abiding interest in the welfare of the patient—these are the essentials. All else is at best a poor substitute.

SLEEP

The subject of sleep was discussed by a number of speakers at the first plenary session of the British Medical Association¹ in Glasgow recently. McDonagh, in discussing the problem from the point of view of the general practitioner, pointed out that the study of sleeplessness is a study of human nature and that a little unravelling and explanation might work wonders and prevent the patient from starting to use drugs. From reading the advertisements one might suppose that a certain mattress or pillow was required, yet half of the world slept on the hard earth; lack of sleep had become a fashionable complaint, partly due to the advertisement of sleeping aids. A man who had had a slightly bad night would have forgotten about it if he were not surrounded by advertisements reminding him that he had not slept well. McDonagh continued with the observation that sleeplessness was a prominent and distressing symptom of cardiac disease, and some other diseases too; on the subject of "night starvation" the speaker pointed out that the best of all prophylactics is a plate of good thick porridge. Douthwaite discussed conditions of the alimentary tract; a relapsing duodenal ulcer or a loaded colon might be a potent cause of sleeplessness.

Sir Geoffrey Jefferson reviewed the physiological aspects of sleep, stating that sleep was a conditioned reflex depending on fatigue of a waking centre rather than on stimulation of a sleep centre: he remarked that control of waking had now been assigned to the reticular substance of the brain stem.

It was interesting to hear that, although most people thought they slept without moving, movement was a feature of normal sleep, and immobility in sleep a sign of pathological coma.

All the speakers reiterated the view that barbiturate therapy should be prescribed cautiously. Dunlop, after recalling the young woman reported to have said, "I don't know whether to take a Benzedrine and go to a party or whether to take a Seconal and go to bed," pointed out that the enormous increase in the use of hypnotics recently could be ascribed to our "stop and go" method of living. The same speaker stated that in his opinion chloral hydrate had stood the test of time as a safe and reliable hypnotic, and that phenobarbitone should never be used as a hypnotic. For a patient with diffi-

culty in getting off to sleep the short-acting cyclobarbiturates or quinalbarbiturates should be given, whilst the long-acting butobarbiturates should be used for the patient who awoke during the early hours of the morning.

Hunter and Greenberg² have recently drawn attention once again to the dangers of continued barbiturate therapy. They describe three cases in which a combination of irregular barbiturate therapy, dietary variation and intoxication and abstinence symptoms gave rise to a clinical picture resembling spontaneous hyperinsulinism. All three patients were indirectly connected with the medical profession and had taken barbiturates for a long period. These authors also condemn the alternation of amphetamine in the morning and phenobarbitone therapy at night. In a recent Editorial in the *Lancet*³ the writer includes in the dangers connected with barbiturate therapy, suicide, addiction, production of porphyria and various systemic toxic effects. With regard to addiction, it may be recalled that Isbell *et al.*⁴ gave large doses of barbiturates to volunteers for periods of over three months; abrupt withdrawal of the drug produced a psychotic condition resembling delirium tremens and also major epileptic seizures.

Barbiturates are used widely throughout the world for the production of sleep, and addiction is one of the prices that has to be paid. It is a grave price to pay, and the attainment of sleep should if possible be achieved by attention to the cause rather than to the symptom.

W. F. T. TATLOW

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Editorial Comments

CORTICOID ANTAGONISM

That certain biological phenomena are regulated by the interaction of mutually antagonistic steroids secreted by the adrenal cortex has long seemed a reasonable hypothesis. Thus, it is known that glucocorticoids such as hydrocortisone (cortisol) suppress inflammation while mineralocorticoids such as desoxycorticosterone enhance this response to injury.

With the discovery that aldosterone, a mineralocorticoid, is secreted by the adrenal cortex in physiologically effective quantities, the stage was set for a demonstration that aldosterone does antagonize hydrocortisone *in vivo*.

Selye (*Science*, 121: 368, 1955) now describes experiments on adrenalectomized rats in which inflammatory response to croton oil was quantitatively assessed by his granuloma-pouch technique. Adequate doses of aldosterone inhibited the anti-inflammatory effects of hydrocortisone, as shown by changes in body weight, volume of exudate and spleen and thymus weight. These findings support the concept of a balance between effects of two opposing and naturally secreted corticoids in the regulation of inflammatory response.

ANÆSTHESIA AND THE BURNED CHILD

A commendable original article (*Lancet*, 1: 112, 1955) has recently been written by Dr. Shannon, anæsthetist at the Royal Hospital for Sick Children, Edinburgh, and entitled "An anæsthetist looks at a burnt child."

Dr. Shannon emphasizes that the treatment of burns is one which demands to the full the co-operation and coordination of all who participate. Each one should appreciate the individual work of the others, at the same time being aware of essential processes which have been altered and of the extent of the changes. Each team member should be alert to new pathological factors which may affect his own particular problem.

It is evident that the first phase is that of shock. In consideration of this, it is of importance to realize the part which anoxia plays in converting the reversible process into an irreversible one. In addition to the current need for blood, plasma, electrolytes and water to compensate for the initial loss, it is important to remember that fluid for metabolic requirements must also be given. The anæsthetist, by virtue of his training and experience, is aware of the significance of hypoxia and of alterations in tissue fluids: his care and advice should therefore be of value in the treatment of shock, in the production of analgesia, and at subsequent operations.

The massive destruction of red cells attendant on an extensive burn, and the accompanying depression of bone marrow function, should remind the anæsthetist that the oxygen capacity of the circulating blood may be low. He should recall also that adequate oxygenation depends upon the integration of several systems, so that each one should be reviewed. He should remember the variations in tissue demands for oxygen under different circumstances.

To ensure full oxygenation, there must be a perfect, clear airway; provision of this may go

even to the point of early bronchoscopy or tracheotomy. There must be available at the alveolar barrier the proper tension and volume of oxygen and there must be an adequate tidal exchange. Factors leading to a relative increase in the volume of the dead space must be avoided. In the early phase, humidified oxygen given by nasal catheter will be of value when there is a reduced tidal exchange or peripheral circulatory failure.

The anæsthetic agent or technique chosen for the surgical procedures is not of prime importance. It is the underlying principles guiding choice and execution which are so noteworthy. These principles may be summarized as follows:

1. Very careful assessment of the patient must be made after diligent observation, examination and discussion with the surgeon.
2. Gentleness and dexterity must be exercised during all diagnostic and therapeutic procedures.
3. Meticulous care should be taken and much thought given concerning intravenous therapy and the use of sedative drugs.
4. Premedication with adequate atropine should be given with a minimum of hypnotic or analgesic drugs.
5. Induction of anæsthesia should be rapid and smooth.
6. Maintenance of anæsthesia should ensure proper oxygen concentration and a normal tidal exchange. The airway should be such as to facilitate this. The depth of anæsthesia should suit the surgical requirements.
7. The agents selected should be those least likely to interfere with the metabolic functions and physiological processes.
8. Rapid postoperative recovery is essential.

R.G.B.G.

HIATUS HERNIA

For years surgeons treated hiatus hernia on the principles so successfully applied to other, more superficial, herniæ, but the results of simple excision of the para-oesophageal sac and closure of the diaphragmatic defect more or less tightly around the oesophagus were not impressive. Patients still complained of their pre-operative symptoms or else developed new ones. In 1953 P. R. Allison, then of Leeds and now Professor of Surgery at Oxford, contributed a rational basis for the understanding and treatment of "reflux oesophagitis." In a recent issue of the *British Journal of Surgery* (42: 231, 1954), N. R. Barrett of St. Thomas's Hospital, London, discusses the whole subject and the change in treatment that Allison's teaching entails. Barrett believes that four groups of hiatus hernia can be separated with advantage.

Congenital short oesophagus is rare; sliding hiatus herniæ, often confused with the congenital short oesophagus, are acquired though they may be found in infants. Gastric mucosa

above the diaphragm, lining what appears to be oesophagus, is common and may be the site of gastric ulcer which may bleed or perforate, as may peptic ulcers below the diaphragm.

Para-oesophageal hernia is described by Barrett as a true hernia and it is argued that its origin lies in the persistence of the pneumato-enteric recess of the embryo. That the greater curve of the stomach is found in the sac is explained by the anchoring of the lesser curve by the left gastric artery. Because the hernia occupies a space behind the heart, pain may be of a cardiac type and it may cause cardiac arrhythmia. Intermittent dysphagia, rare strangulation, ulceration of the herniated stomach with bleeding, and other symptoms are explained on this basis. When surgical intervention is necessary, the defect in the diaphragm between the aorta and oesophagus is repaired and the stomach fixed below the hiatus.

The *sliding hiatus hernia*, which is the commonest type (ten times more common than all others in Barrett's series), causes symptoms because the mucosal valve preventing reflux of gastric contents into the oesophagus becomes incompetent. The importance of maintaining this valvular control and the results of its loss—oesophagitis, ascending oesophageal fibrosis and strictures—are thus demonstrated. In developing this theme, Barrett summarizes his views on the principles of operation to cure reflux oesophagitis by stating that in addition to reduction of the hernia and possible reduction in size of the oesophageal hiatus it is important to reconstitute the oesophagogastric angle by fixing the cardia below the diaphragm so as to allow the fundus to balloon upwards and aid valvular action.

The fourth type of hiatal hernia is labelled "mixed" or "rolling" hernia because both para-oesophageal and sliding herniae are present.

Barrett has thus applied the concepts of Allison to hiatus hernia. Further practical applications to the field of gastrectomy for peptic ulcer may be inferred.

BURNS PLEWES

LEAD POISONING IN CHILDREN

In a recent issue of the *British Medical Journal* (February 5, 1955) attention is drawn to the importance of the early recognition of cases of lead poisoning in young children, in order to prevent the onset of serious sequelae or even fatalities.

In the first paper by Drs. Gibb and MacMahon of the Manor Hospital, Surrey, the case history is presented of a 7½-year-old boy who showed a marked arrest of mental development after an episode of so-called "food poisoning", shown by the authors to have probably been lead poisoning at the age of 3½ years. The continual ingestion of slight amounts of lead from lead soldier toys resulted in his loss of speech and other evidences

of mental deterioration. He continued to ingest lead from various sources such as discarded leaded paint pots and brushes, and on admission to hospital showed a very high urinary lead excretion of 435 micrograms as compared to controls of 24 micrograms in 24 hours. The emphasis on the serious aftermath of plumbism as it affects mental development is well made by these authors; a child who has recovered from lead encephalitis should not be considered as "cured" until he has been followed up and shown to be normal at the age of 16 years.

The next paper by Dr. Marsden and Mr. Wilson presents the histories, biochemical findings and autopsy findings in two fatal cases of lead poisoning occurring at the Royal Manchester Children's Hospital. The authors rightly stress the difficulties of diagnosis in some cases, as the cardinal signs of adult plumbism are frequently absent. Colic, lead line on the gums and even basophilic stippling may not be present, unless repeated blood smears are examined on different occasions. Stippling was present in only one of the cases reported. A new finding was that the urinary chromatogram showed a considerable excess of cystine and β -aminoisobutyric acid.

The most easily demonstrated diagnostic feature in lead poisoning in children is the sharp line of increased density at the metaphysis of the long bones due to lead deposits. The presence of excess lead in the urine confirms the diagnosis. Young children between one and two years of age frequently develop pica and may bite on the many types of painted articles such as kitchen tables, window sills, verandahs, railings or painted toys and in this way ingest small amounts of lead. It usually requires three to four months to develop acute symptoms of encephalitis. The sequelae of the encephalitis may be of such a serious nature as blindness, deafness or, as emphasized by Gibb and MacMahon, arrested mental development leading to "infantile autism."

At the Hospital for Sick Children, Toronto, there has been a progressive decline in the number of lead poisoning admissions over the past 15 years. Before 1940 there was an average of 25 to 30 cases admitted each year; this has now decreased to two to four admissions per year. This decline is partly due to the education of parents by public health nurses and others as to the dangers of pica in small children, and partly to the decrease in the use of lead-containing house paints in the home. Legislation in Canada now prohibits the use of lead-containing paints on children's toys and children's furniture.

The fact still remains, however, that lead is a very poisonous metal when ingested by small children; because of its slowness of excretion it accumulates in the body and has its major effect on nervous tissue and blood cells. Every effort should be made to avoid ingestion of lead by children in the teething period.

Men and Books

AMBROISE PARÉ: THE BARBER-SURGEON

VALENTINE ST. JOHN, Kelowna, B.C.

"I dressed him and God cured him."

ONE NIGHT, some four centuries ago, an old man was ushered into a little room in the town of Orleans in France, where another man sat deep in study. In defiance of the curfew law an oil lamp burned brightly on the table before him. Books lay open and a few primitive surgical implements were scattered about.

"You take no rest, Ambroise," remarked the visitor as he entered. "While saving the lives of others you sacrifice your own."

The man addressed was middle-aged, tall of stature, bearded, of thoughtful mien, and he seemed entirely absorbed in the examination of a skull, recently snatched from the grave, and into the side of which he had made an opening. He raised his head.

"It is a matter of saving the King!"

"Are you so sure of yourself, Ambroise?" asked the old man, trembling.

"As sure as I am of my very existence. Hark, my old friend, and let me explain. The King has peccant humours that press upon the brain, and left to themselves they will flood it. The danger is imminent. By boring through the skull I expect to release these humours and clear the head. I have already performed this operation, which was invented by a Piedmontese and perfected by myself, three times. The first occasion was at the siege of Metz, when I operated upon Monsieur de Pienne, whom I thereby saved, and who became more intelligent thereafter than he had been before: he had a deposit of humours in the head caused by a shot from an arquebus. The second time I saved the life of a pauper on whom I had wanted to test once more the value of the bold operation to which Monsieur de Pienne had submitted. And the last operation of this kind I did in Paris on a gentleman who now enjoys perfect health. The Trepan—such is the name of this invention—is as yet but little known. Patients do not take readily to it because of the imperfections of the instruments which, however, I have at last succeeded in partially correcting. I am therefore practising on *this* head, that I may not fail tomorrow when I attack *that* of the King."

"You must indeed be sure of yourself," warned the old man, shaking his head, "for you might have to pay for it with your own head if . . ."

"Oh, I would wager my life that he will recover," interrupted Ambroise in a confident voice. "After all, what does perforating a skull amount to if done with reasonable care? Isn't it

what our soldiers are doing daily in battle, and without taking any precautions whatsoever?"

"My son," spoke the anxious burgher solemnly after a moment's pause, "don't you realize that to save the King is to ruin France? Are you not aware that this instrument of yours would place the crown of Valois on the head of Lorraine, who claims to be the descendant of Charlemagne? Don't you know that Surgery and Policy are at this moment sternly opposed to each other? Yes indeed, the triumph of your *genius* would mean the downfall of your *religion*. If the Guises retain the regency, the blood of the Reformers will flow like water. I implore you, my son, reflect a little, let your greatness as a citizen surpass for once your eminence as a surgeon and—just oversleep yourself tomorrow morning and leave the royal chamber to the leeches who, if they do not cure the King, will certainly cure France!"

"What!" retorted Paré. "You would have me let a man perish when I can save him? No. Never. Though I should be hanged as an abettor of Calvin, to the Court I shall go. The only favour that I will ask, after saving the King, is the life of your boy Christopher. There *must* come a moment when Queen Mary can refuse me nothing."

"Alas, my friend," answered the other sadly, "did not the young King refuse the Princess of Condé the reprieve of her husband? Do not, I implore you, destroy your religion by preserving the life of one who has to die!"

"There you are," cried Paré, "attempting to find out how God intends to preordain the future! No, my friend, honest men have but one motto: Do your duty, come what may! This I did at the siege of Calais when I put my foot on the face of the Grand Master, the Duke of Guise, and took my chance of being quartered by his friends and servitors. But in spite of that I am this day the King's surgeon, and moreover, though I am of the Reformed Church, I count the Messieurs de Guise themselves as my friends. Have no fear," cried the surgeon, with the fervour that springs from boundless self-confidence, "I shall save the King and God will save France!"

* * *

Who is this man, Ambroise Paré, who speaks with such courage and determination, whose serenity is so little ruffled by the hazards of the portentous act he contemplates? With regard to the real man we can but make surmises, conjectures, inferences. What do we know, after all, of what lies in the depths of any man's soul? Strip it, if you can, of the trimmings and trappings foisted upon it by tradition and environment, and then examine that residue which alone imparts to the man those traits and qualities that constitute his uniqueness, which has never been duplicated in the history of the race. Hardly do we know ourselves or our close contemporaries, let alone a man who lived and died four centuries ago.

Of the circumstances attendant upon the activities of the outer man, the *persona* that went by the name of Ambroise Paré, some items of information, not entirely legendary, have come down to us. We know, for instance, that he was born of poor parents and that education he had none. "I make no claim," he writes, in the words of the *Confessio Medici*,* "to have read Galen either in Greek or in Latin: for it did not please God to be so gracious to my youth that it should be instructed in the one tongue or in the other." No, nor did his medical training ever partake at any time of an academic character. "One day, when I was but a boy, Laurence Colot came to Laval to cut a man for the stone: and when I saw the stone I said to myself that I would be a surgeon. So my father apprenticed me to a barber-surgeon, and I shaved, cut hair, dressed wigs and sold pomades."

If Paré was launched on his professional career without any of those educational advantages on which we lay so much stress nowadays, at least, as a corollary, he was spared the influence of the stultifying, dogmatic scholasticism that oppressed the centres of learning in those days, and of which a faint shadow falls but rarely upon the medical teaching of our own time. Excessive schooling, it is admitted by many, is not an unmixed blessing, nor is timely apprenticeship entirely without merit. When potentialities of development are present, that is, raw material of suitable quality, then indeed may well-directed education activate the latent brain cells. In their absence, however, education but serves to swell the sound of the empty vessel. Then we see individuals who appear well groomed, pleasant to the touch and to the sight, but, like the products of the hothouse, devoid of savour and fertility.

Paré at least started life with a clean slate, and what was thereafter written upon it was by his hand alone, guided by Experience, that greatest teacher of all.

Let us then follow, if we are curious, some of those early tracings on the slate of life, and incidentally witness the apparently fortuitous birth of a discovery that not only abolished more pain and misery than our imagination can picture, but derived further significance from the fact that it exploded one of those tenacious superstitions so prevalent in the history of the healing art.

It was on the evening following an engagement near Mont Cenis, in the year 1537, that young Paré made this discovery.

"I had not yet seen gunshot wounds at the first dressing," he writes—and we quote again from the *Confessio*—"I had read in John de Vigo, Book one, Of Wounds in General, Chapter eight, that wounds made by fire-arms partake of venosity, by reason of the gunpowder; and for their cure he bids you cauterize them with oil of elders, scalding hot, mixed with a little treacle. And to make no mistake, before I would use the said oil, know-

ing that it was to bring great pain to the patient I asked first, before I applied it, what the other surgeons used for a dressing; which was, to put the said oil, boiling well, into the wounds with tents and setons: wherefore I took courage to do as they did. At last, my oil ran short; and I was compelled, instead of it, to apply a digestive made of yolks of eggs, oil of roses and turpentine. In the night, I could not sleep in quiet, fearing some default in the not cauterizing, lest I should find those, to whom I had not applied the said oil, dead from the poison of their wounds; which made me rise very early to visit them: where, beyond my expectation, I found that they to whom I had applied my digestive had suffered but little pain, and their wounds without inflammation or swelling, having rested fairly well that night. The others, to whom the boiling oil was applied, I found feverish, with great pain, and swelling round the edges of the wounds. Then I resolved nevermore to burn thus cruelly poor men with gunshot wounds. See how I learned to treat gunshot wounds: not out of books."

Paré's second great discovery dates from 1552, when he discarded red-hot irons for the purpose of stopping bleeding after amputations and substituted the ligature—"which it pleased God to teach me, without I had ever seen it done in any case, no, nor read of it."

Prometheus, says the author of the *Confessio Medici*, who brought fire to suffering mortals, is not to be compared with this good surgeon, who took it away from them.

* * *

Returning to the subject of the opening dialogue, history tells us that King Francis II, wishing to be absent from the town of Orleans on the day of the Prince of Condé's execution, no less from fear of the Princess's tears than of an uprising of the townfolk, had decided to sail upon the river. At the moment of embarkation one of those cold winds that sweep the Loire at the approach of winter gave him so cruel a pain in the ear, says the chronicler, that he was forced to return; and he took to the bed from which he was to rise no more.

There, on the morning following the conversation between Ambroise Paré and his old friend the furrier Lecamus, lies the stricken sovereign, looking very small and insignificant in his great four-poster. The room is a large one adjoining the great hall of the Bailliage. It is wainscoted with oak and dark with tapestries, the gloom in part relieved by the pretty ceiling with its golden background arabesqued in blue. The king, a mere lad of seventeen, is still under the influence of the potion administered by Paré, but his features are beginning to twitch with pain. At the head of the bed sit his young wife, Mary Stuart, pale and worn after a night passed in prayer and anguish, and the Duchess of Guise who has shared her vigil. By the fireside stands Jean Chapelain, a friend of Paré's, now physician to the present king and later to his successor, Charles IX.

Upon this scene, and upon this eventful morning, the first to break in is the Queen Mother who, drawing near the bed, contemplates the hectic features of her son with an admirably

**Confessio Medici*—By the writer of "The Young People", Macmillan & Co., London, 1908.

simulated expression of concern and commiseration. The group is presently joined by others: the princes of Lorraine, Ambroise Paré, and three other physicians summoned by Catherine, whose mediocrity amply explains their hatred of Paré. And then came the Chancelier de l'Hôpital; Robertet, the secretary of state; two marshals of France, the lord privy-seal, and other great people.

There is deep silence, broken only by the moans of the king, whose head is racked with pain. The air is charged with impending drama, for one and all are aware that not only the life of a king hangs in the balance, but that there are great issues at stake, involving the personal safety and liberty of some, the life-deep ambitions of others, the fate, perchance, of a nation.

Ambroise examines the sick man once more. Turning to the Dukes of Guise, who had joined the group, he explains the cause of the King's illness; that, in this extreme case, it is necessary to trephine the head, and that he, the surgeon, awaits the order of the physicians to begin.

"What, pierce the head of my child as though it were a plank?" cries Catherine of Medicis. "And with that horrible instrument! Maître Ambroise, I will not suffer it!"

"But, Madame," pleads Mary Stuart, "if this should be the *only* means of saving him?"

"Ambroise," cries Catherine again, "do not forget that your head answers for that of the King!"

And then the physicians chime in:

"We too are strongly opposed to the treatment proposed by Maître Ambroise. We believe that the King can be saved by injecting into the ear a drug which will draw the humours out into the canal."

The young king is livid. He mumbles the name of Mary and holds the hand of his weeping wife. The Duchess of Guise leans against one of the bed posts, appalled by the audacity of Catherine who so manifestly welcomes the death of her child. The two princes of Lorraine look anxious too, and there is danger in the glances they flash at the Queen Mother. And there also stands Ambroise Paré, holding his instruments in readiness, but not venturing to begin until the quietness necessary for an operation, as well as the approval of the physicians—before whose authority he, as a mere barber-surgeon, is supposed to incline—shall be forthcoming.

"Monsieur le Chancelier," cries Catherine towards the hall, "the Messieurs de Guise wish to authorize a strange operation upon the person of the King. Ambroise actually proposes to pierce his head! I, as his mother and as a member of the Regency, protest against a procedure that appears to be nothing short of high treason. The three physicians are in favour of an injection which seems to me quite as efficacious and much less dangerous than the brutal operation of Ambroise."

As these words are spoken, there arises a smothered murmur in the hall. The chancellor

enters the bedroom and the cardinal closes the door behind him.

"But I am Lieutenant-general of the Kingdom," says the Duke of Guise, "and I would have you know, Monsieur le Chancelier, that Ambroise, the King's surgeon, answers for his life."

And then there is more haggling and raising of voices. Finally the great Ambroise, who knows his strength but whose patience is becoming exhausted, imposes silence with a commanding gesture.

"Ah, Messieurs," he cries, "if this be the turn that things are taking, I will show you where I stand. This bed"—he sweeps his arm over it—"and the patient who lies on it are *mine*. I claim to be sole master of the situation and assume sole responsibility. I know the duties of my office and I shall operate upon the King with or without the sanction of the physicians!"

* * *

We are not surprised when we read that Paré rose steadily in his profession, was surgeon to a multitude of crowned heads, attended a host of persons of lesser magnitude and, like many a modern doctor, loved not least the poor man. Though a staunch Huguenot, he was so much appreciated by the king that on the night of the massacre, it is related, he locked the surgeon in a room of the Louvre, swearing *pardieu* and *mordieu* that "it was not reasonable that a man who was worth a whole world of men should be murdered."

From the point of view of professional standing Paré ranks with his contemporaries Vesalius, the founder of scientific anatomy, who was Flemish-born and of German extraction; and the mysterious Paracelsus, a native of Switzerland, who discarded the herb medicines of Galen and founded the chemical school by the introduction of mineral medicaments such as mercury, sulphur, iron and arsenic. These were the three great medical leaders of the Renaissance, and their influence on the healing art can not be overestimated. They were keen searchers into the secrets of nature, fearless proclaimers of the truth, and belonged to a group whose unorthodoxy brought some to the stake and others perilously near it.

Paré's many gifts to the art and science of surgery, judged not only by the period in which he lived, but from the more exacting standard of medicine's contribution to human progress, are quite outstanding.* Yet I think we owe even more to the memory of the man than to that of the surgeon. He was one of those rare individuals

*Paré's own work covers a lot of ground: he introduced massage, and artificial limbs and artificial eyes, which he made of gold and silver. He popularized the use of the truss and introduced the non-mutilating operation for hernia.

He also described fracture of the neck of the femur, and retention from hypertrophy of the prostate, and guessed the chief cause of aneurysm. In obstetrics he promulgated podalic version and introduced artificial induction of labour in cases of hæmorrhage, and in dentistry he introduced re-implantation of the teeth.

who permanently raise the level of the profession to which they belong and thereby add to the inalienable heritage of the race. As we follow him through the by-ways of life, through the wards of the Hôtel-Dieu, the military camps and the peasant's cottage, and observe the ease and *aplomb* with which he moves in the uncertain atmosphere of the French court, we cannot but be impressed by the independence of his unorthodox mentality and the firmness of character which brings his actions so unwaveringly into line with his thought.

The two dramatic scenes to which Balzac lent so much realism give us an insight into his mental processes, and the thrilling interchange of thought with old Lecamus constitutes a veritable confession of faith—of faith in himself; faith in his ability to plan and to execute; faith, above all, in a professional ideal. Paré knows no considerations of expediency when the principle of his professional duty is involved. Devotion to his calling is entire and complete, and assumes the dignity of an apostolate. His statue at Mayenne bears the inscription *Je le pansay, Dieu le guarit*—I dressed him and God cured him—and these words, oft recurring in his writing,* reveal his deep piety and humbleness, his sincere conviction that he himself is but an instrument wielded by a higher power for the purpose of alleviating human pain.

c/o The Knox Clinic,
Kelowna, B.C.

*I am personally aware of the existence of only two copies of Paré's works, one in the Bibliothèque Nationale in Paris, while I was surprised to find the other in the magnificent private library in Bologna of the late Professor Putti, who was also a great man and a great surgeon.

GENERAL PRACTICE

THE BUSINESS SIDE OF GENERAL PRACTICE

J. R. IBBERSON, M.D., *Calgary, Alta.*

[The following notes on some aspects of the business side of general medical practice are taken from a series of lectures given to interns at the Calgary General Hospital.]

PUBLIC RELATIONS



THE FOLLOWING were selected as the three best definitions of public relations from hundreds submitted by public relations experts from representative sections of Canada and the United States.

1. The practice of matching policy with public interest and communicating such policy to those publics which are concerned.

2. The practice of doing the right thing in the right way at the right time and place, and then explaining it in the right words and images to the right people.
3. A fundamental attitude of mind; a philosophy of mind which deliberately and with enlightened selflessness places the particular interest of the public first in every decision affecting the operation of the business.

Take your pick. Note that it is necessary not only to DO but also to TELL. In the case of the medical profession the DOING would have to be by the medical practitioner, and the TELLING by the medical profession—at least that would be my guess.

PERSONAL EFFICIENCY

Medicine would deteriorate if it were commercialized. Medicine is not, nor must it ever be allowed to become, a business in a commercial sense. However, applying basic business principles and procedures in their proper relation to medical practice is another matter and the patient has the right to expect that the physician will deal with him in a business-like manner. He wants to pay for what he gets within his means. Practitioners whose methods of handling accounts are dependable naturally inspire patients with confidence.

CO-OPERATION WITH COLLEAGUES

Admittedly, the role played by personality in a successful practice cannot be minimized, but there is no permanency unless it is built on foundations of ability plus character. Individualism in the application of scientific knowledge is essential to the welfare of both the patient and the physician. In the doctor's relationship with his colleagues individualism, however, is outmoded. The day when the competitor's medicine was thrown out the window has long since passed. Unfair competitive methods not only create distrust in the public mind but they demoralize medical practice in the community. It is easy to take advantage of a colleague, but eventually the guilty practitioner will suffer equally with the other. The tendency on the part of physicians in recent years to show good will toward their fellows and to work in harmony with them is most encouraging. It is based upon honesty and a sincere desire to help the patient.

OFFICE MANAGEMENT

Patients are more observant than many physicians realize. The practitioner may make a good impression personally only to have it destroyed when the patient later visits his office. It is a common failing of people in all pursuits not to see themselves and their surroundings as others see them. The doctor is no exception. The most important fact which patients observe is

whether the doctor's office is clean and tidy. In most patient's minds antisepsis is associated with scrupulous cleanliness and a high degree of orderliness. Whether pretentious or modest, the doctor's office should be so arranged that it contributes to his efficiency and to the comfort of his patients.

OFFICE ARRANGEMENTS

The minimum arrangement for a medical office should include a reception room and business office, a consulting room, at least one examining room and a small laboratory. It has been found from experience that men in general practice frequently require larger office space than those in specialties because of the more diversified nature of their work. It is suggested that men in general practice usually have at least two examining rooms. In this way no time is lost while waiting for a patient to dress or undress and two patients can be handled at one time.

An efficient doctor's office operates smoothly and seemingly without effort. Everything is done with promptness, and yet without flurry or commotion. Unnecessary noises are taboo. Failure of the physician to keep appointments may prove a source of irritation to the patient. Physicians should remember that other people's time, in most cases, is just as valuable as their own. When for some reason an appointment cannot be kept, the physician owes it to his patient to advise him when he can be seen. It would seem unnecessary to suggest that the physician should be available at all times, yet younger physicians in particular are negligent in this regard. The first requisite, of course, is to have someone in the office who will co-operate with the patient in locating the doctor when he is out of the office. An indifferent "don't know" attitude has lost many patients.

MEDICAL RECORDS AND HISTORIES

We have found it most convenient to record patient's histories according to families in a manila folder, creating a single sheet with a fly tab for each member of the family. In this way details pertinent to different illnesses can be recorded. All letters and reports dealing with each individual may be kept in this folder. This record is kept on a chronological dating corresponding with each service rendered, whether an office call, house call, telephone communication, or admission to hospital.

Many men use the same system on a folded card. This has the disadvantages of not including all members of the family and leaving no place to file other reports and letters.

Some men in the specialties have developed a type of mimeographed sheet. We have found that this lacks the elasticity required in general practice where one is dealing with men, women

and children, and with medicine, surgery and obstetrics.

An interesting aid has been the use of some type of dictating machine. This has created a marked improvement in office records and has allowed the noting of impressions in greater detail. This was impossible when records were compiled by hand. It has had the effect of keeping records immediately up to date since dictating is usually done between consultations and the physician can be absolutely certain as to findings, for example, whether a lesion was right- or left-sided.

FINANCIAL RECORDS

It is wise to employ the services of an accountant for the purpose of setting up a profitable bookkeeping system, for monthly checks and periodic business statements, compiling income tax returns, assisting the physician in wise business management, expansion and investments. The bookkeeping system should record all money transactions in such a manner that they can be checked and double-checked. One of the simplest systems is to have a single financial card for each patient with a credit, a debit and a balance column. On this printed card can be listed the patient's name, address, place of employment, the date of each visit or service given and the charges set out against each detail. Receipts should be given for all cash received. They should state whether the money is in the form of cash, cheque or money order. Receipts should be numbered. Bank deposits, cash on hand, cheques written and disbursements should all be recorded in a daily ledger type of bookkeeping system which can be broken down into synoptic sheets at the end of each month.

STATEMENTS

Statements should be sent out at regular intervals to all patients covering all accounts receivable. If charges are fair and just, there is no reason for not acquainting the public with the itemized details of the account.

EXTENSION OF CREDIT

A medical man unfortunately is unlike most other businessmen in that he has no control over the amount of credit he extends to his patients. However, some idea of the credit outstanding can be obtained by listing each month the amount of credits receivable and breaking this list down into current accounts, 30 days, 60 days and 90 days plus. In this way one can get a definite figure and the percentage to show how much of the total credit extended is current, 30 days, 60 days, and 90 days plus. This has the effect of stimulating whoever is collecting the accounts and it gives the doctor a good idea of the credit picture and hence a better idea of how to live within his income. There is no easy way

to collect accounts. Fundamentally the problem is one of hard work, persistence and tact. The best basis for collecting accounts is good work, services gladly rendered and a pleasant patient-physician relationship.

CHARGES TO PATIENTS

They should always be in accordance with the minimum schedule of fees as set forth in each specific province. Where a reduction is made, the charge, as set forth in the schedule of fees, should be stated and beneath that a reduction of whatever percentage one wishes to give up to 100%. This is made with some statement such as "Discount as prearranged" or "Discount due to extenuating circumstances." This gives the public a clear picture of our schedule of fees.

CONDUCTING A PRACTICE

The aim is to provide the best possible service to the public. This is done easiest when the office runs smoothly and efficiently, and those rendering the service, namely, the doctor and his office assistant, enjoy their work. Many of the frustrations complained of by our confrères can be avoided by the simple expedient of training one's patients. In essence this amounts to educating one's patients to see the annoying problems of medical practice from our side of the table as well as their own. When unnecessary calls are requested at abnormal hours it is best to render the service and complete the medical aspect of the problem, and then sit down and explain to the patient why it was an unnecessary call. If people know that you are available to help them, they are less likely to infringe upon your free time except when absolutely necessary.

ENGLISH G.P.'S START OWN HOSPITAL



THE GENERAL PRACTITIONERS of Kingston, an outlying suburb of London, used to have a little voluntary hospital, the Kingston Victoria Hospital, which was their pride and joy. After the National Health Service began, the work continued under the local Regional Hospital Board, but in 1951 the Board decided to close the hospital and turn it into a gynaecological unit. The local general practitioners, incensed by the Board's rather high-handed decision and general handling of the affair, fought a gallant rearguard action which they carried right to the House of Commons. They have now turned the defeat they sustained there into a victory, for it is announced that as a result of a national appeal sufficient money has been collected to buy a country

house and convert it into a 20-bed voluntary hospital, where the local practitioners will be able to treat their cases as in the old days. Most of the old consultants have agreed to attend the new hospital, whose beds will be absolutely free of charge. Apparently there is nothing in the National Health Service Act of 1946 which interferes with the rights of citizens to found and operate new voluntary hospitals, though this is the first time since 1946 that a body of citizens has done so. Whatever the rights or wrongs of the original dispute, we cannot but admire the tenacity of purpose of the local G.P.'s, who evidently had considerable backing from their patients in their fight for hospital privileges.

MISCELLANY

A LOOSE-LEAF THERAPEUTIC FILE

For some years I have felt the pressing need for a file to list new drugs, their uses, contraindications and cost. I have made one which saves me much time, worry and annoyance, for I do not like telephoning my druggist every time about these matters. In ten minutes today I listed all I need to know about a drug, from an article I read in the *C.M.A. Journal*. My file is made up by using the prescription pad and file distributed by one of the wholesale drug companies two or three years ago. The file is four inches from top to bottom, six inches wide, and now (nearly full) is about two inches in thickness. I have used a sheet of good-quality writing paper for each heading and subheading, and inserted sheets into a three-ring file, holes being punched after Scotch tape has been used to reinforce the hole. I use the following as headings and subheadings:

1. Analgesics—narcotics, sedatives.
2. Antiseptics—general, antibiotics, sulphonamides, virus diseases and fungal diseases.
3. Antiallergics.
4. Biliary (and pancreas).
5. Blood—iron preparations; iron with others such as folic acid, vitamin B₁₂, other vitamins; other tonics.
6. Cardiovascular—general; peripheral.
7. Gastro-intestinal—stomach and small bowel; large bowel; infections.
8. Genital—uterus and ovaries; vagina; hormones.
9. Geriatrics.
10. Locomotor—bones and joints; muscles.
11. Nervous system—central (e.g., migraine, epilepsy, etc.); peripheral; autonomic, functional; psychosis, neurosis.
12. Paediatrics—infections; feeding.
13. Respiratory—upper tract; lower tract.
14. Skin—infections; dry lesions; moist lesions; cosmetics.
15. Urinary—kidney; lower tract.

With a loose-leaf system which cost me little, saves much time, and is readily rearranged, I am, for the present, more content.
F. S. DORRANCE, M.D.

[It is possible in the United Kingdom to subscribe to a similar filing system for new products. Basic data on these are printed on 3 x 5 inch cards, and cards for new products are sent to subscribers for insertion into a filing box.—EDITOR]

Preliminary Scientific Programme

for the

CONJOINT ANNUAL MEETING

**British Medical Association
Canadian Medical Association
Ontario Medical Association**

TORONTO, JUNE 20 - 24, 1955

Morning Sessions — Monday, June 20, 1955**ROUND TABLE CONFERENCES**

9.00 - 10.15 a.m.

The Management of Prostatic Obstruction.*Chairman:* DR. C. L. GOSSE, Halifax.**The Nature of Pain.***Chairman:* DR. FRANK TURNBULL, Vancouver.**The Role of the General Practitioner in the Diagnosis and Treatment of Glaucoma.***Chairman:* DR. A. J. ELLIOT, Toronto.**The Problem of the Anæmias.***Chairman:* DR. E. S. MILLS, Montreal.**PLENARY SESSION**

10.30 a.m. - 12.15 p.m.

The Present Status of Chemotherapy of Bacterial Infections.*Chairman and Opening Speaker:* PROF. L. P. GARROD, London; *Speakers:* DR. T. E. ROY, Toronto; PROF. J. W. CROFTON, Edinburgh; DR. K. J. R. WIGHTMAN, Toronto.**Morning Sessions — Tuesday, June 21, 1955****ROUND TABLE CONFERENCES**

9.00 - 10.15 a.m.

Surgery of the Lungs.*Chairman:* DR. R. M. JANES, Toronto.**Is Prenatal Care Worthwhile?***Chairman:* DR. ELINOR F. E. BLACK, Winnipeg.**The Prevention and Treatment of Poliomyelitis.***Chairman:* DR. C. E. VAN ROOYEN, Toronto.**Alcoholism in Industry.***Chairman:* DR. W. HARVEY CRUICKSHANK, Montreal.**GENERAL SESSION**

10.30 a.m. - 12.15 p.m.

The Blackader Lecture: The Changing Pattern of Pædiatrics.*PROFESSOR STANLEY GRAHAM, Glasgow.***Variations on a Neurological Theme.***SIR GEOFFREY JEFFERSON, Manchester.***The Art of Dermatology.***DR. R. B. MCKENNA, London.***Morning Sessions — Wednesday, June 22****ROUND TABLE CONFERENCES**

9.00 - 10.15 a.m.

The Management of Coronary Thrombosis.*Chairman:* DR. HAROLD SEGALL, Montreal.**Deafness.***Chairman:* DR. W. J. McNALLY, Montreal.**The Management of Bronchial Asthma.***Chairman:* DR. BRAM ROSE, Montreal.**The Recognition and Management of Depressive Reactions.***Chairman:* DR. R. O. JONES, Halifax.**PLENARY SESSION**

10.30 a.m. - 12.15 p.m.

The Clinical Application of Physiology to Medicine and Surgery.*Chairman and Opening Speaker:* PROFESSOR SIR HENRY COHEN, Liverpool; *Speakers:* DR. JOSEPH DOUPE, Winnipeg; SIR HENRY DALE, London; DR. J. S. L. BROWNE, Montreal.**Morning Sessions — Thursday, June 23****ROUND TABLE CONFERENCES**

9.00 - 10.15 a.m.

The Management of Rheumatoid Arthritis.*Chairman:* DR. WALLACE GRAHAM, Toronto.**The Care of Premature Infants.***Chairman:* DR. J. F. MCCREARY, Vancouver.**Anæsthesia for the Aged Patient.***Chairman:* DR. HAROLD R. GRIFFITH, Montreal.**Problems in Dermatology.***Chairman:* DR. GEORGE S. WILLIAMSON, Ottawa.**GENERAL SESSION**

10.30 a.m. - 12.15 p.m.

A Plea for Simplicity in Anæsthesia.*PROFESSOR SIR ROBERT MACINTOSH, Oxford.***Indications for the Use of Cæsarean Section.***PROFESSOR DUGALD BAIRD, Aberdeen.***The General Practitioner and the Laboratory.***DR. WILLIAM PICKLES, Aysgarth.*

Morning Sessions — Friday, June 24

ROUND TABLE CONFERENCES

9.00 - 10.15 a.m.

The Value of Mass Radiography.

Chairman: DR. G. C. BRINK, Toronto.

The Treatment of Burns.

Chairman: DR. S. D. GORDON, Toronto.

Low Back Pain.

Chairman: DR. R. I. HARRIS, Toronto.

Rehabilitation Following Industrial Injury.

Chairman: DR. BRUCE H. YOUNG, Toronto.

GENERAL SESSION

10.30 a.m. - 12.15 p.m.

**The Gordon Richards Memorial Lecture:
Why Do Cancer Patients Delay?**

DR. J. RALSTON PATERSON, Manchester.

What Not to do in Gallbladder Surgery.

SIR HENEAGE OGILVIE, London.

The Place of Psychology and Psychiatry in Medical Education.

DR. DESMOND CURRAN, London.

Afternoon Sessions — Wednesday, June 22

SECTIONAL MEETINGS

2.00 - 5.00 p.m.

Anæsthesia

DR. C. LANGTON HEWER, St. Albans.

Physiology and Complications of the Trendelenburg Position.

DR. H. R. GRIFFITH, Montreal.

Whither Now in Anæsthesia?

DR. A. R. HUNTER, Manchester.

Antidotes to Curarizing Drugs.

DR. LEON LONGTIN, Montreal.

A New Technique of Intubation for the Prevention of Contralateral Infection During Lung Surgery.

DR. R. W. COPE, London.

Anæsthesia for Children and the Newborn.

DR. PHILIP R. BROMAGE, Emsworth.

Spirometry in the Assessment of Analgesia after Abdominal Surgery.

Afternoon Sessions — Thursday, June 23

2.00 - 5.00 p.m.

Anæsthesia

DR. D. A. BUXTON HOPKIN, London.

Chlorpromazine.

DR. H. J. SHIELDS, Toronto.

History of Anæsthesia in Canada.

DR. RONALD JARMAN, London.

The Anæsthetic and the Anæsthetist.

DR. FERNANDO HUDON, Quebec.

Considerations on Recovery Rooms.

Round Table Discussion of Questions Arising from the Meeting.

Moderator: DR. B. C. LEECH, Regina.

Afternoon Sessions — Tuesday, June 21

2.00 - 5.00 p.m.

Child Health

Some Problems of the Neonatal Period

DR. V. MARY CROSSE, Birmingham, and

DR. JEAN F. WEBB, Ottawa.

Vital Statistics—Causes of Neonatal Mortality.

PROFESSOR W. S. CRAIG, Leeds.

Anoxia and Respiratory Failure.

DR. PETER H. SPOHN, Vancouver.

Retrolental Fibroplasia.

DR. H. BRUCE CHOWN, Winnipeg.

Erythroblastosis.

DR. WILLIAM L. DONOHUE, Toronto.

Causes of Death in Prematurity.

PROFESSOR ALAN MONCRIEFF, London.

Congenital Malformations, Causation and Prevention.

MR. DENIS BROWNE, London.

Congenital Malformations, Surgery.

Afternoon Sessions — Wednesday, June 22

2.00 - 5.00 p.m.

Child Health

A. Problems of Gastroenteritis

DR. FRANCES H. PRISSICK, Montreal.

Bacteriology.

DR. B. SCHLESINGER, London.

Drugs and Antibiotics.

DR. W. PAYNE, London.

Fluid and Electrolyte Balance.

B. Respiratory Diseases

PROFESSOR W. GAISFORD, Manchester.

Five Years' Experience with BCG in the Newborn.

DR. GLADYS L. BOYD, Toronto.

Bronchiectasis.

Afternoon Sessions — Wednesday, June 22

2.00 - 5.00 p.m.

Dermatology

DR. D. I. WILLIAMS, London.

The Whitfield Tradition in Modern Therapy.

DR. R. MASON BOLAM, Newcastle upon Tyne.

Acute Skin Diseases in General Practice.

DR. BRITAIN M. SANDERS, Toronto.

Ringworm of the Scalp.

DR. B. USHER, Montreal.

Further Studies on the Pathogenesis of Rosacea.

Afternoon Sessions — Thursday, June 23

2.00 - 5.00 p.m.

Dermatology

Clinical session at Toronto General Hospital presented by the Section of Dermatology, Academy of Medicine, Toronto.

Afternoon Sessions—Monday, June 20

2.00 - 5.00 p.m.

General Practice**Symposium—The Management of Abortion in General Practice.***Moderator:* DR. JOHN MANN, Toronto. *Participants:* DR. JOSLYN ROGERS, Toronto; MR. J. R. NICHOLSON-LAILEY, Taunton; DR. MARY ESSELMONT, Aberdeen.**Afternoon Sessions—Thursday, June 23**

2.00 - 5.00 p.m.

General Practice

DR. IAN D. GRANT, Glasgow.

Problems in the Management of the Aged.

DR. ALISTAIR McCRONE, Glasgow.

"Let Me See Your Tongue." "Why?"

DR. F. M. ROSE, Preston.

Problems of Hypertension in General Practice.

DR. HAROLD F. ROBERTSON, Toronto.

Occluding Arterial Lesions of the Leg.

DR. J. A. McDONALD, Glace Bay.

Some Observations on Prognosis and Treatment of Acute Emergencies in the Aged.

DR. JOHN R. IBBERTSON, Calgary.

Preparing the Geriatric Patient for Surgery.**Afternoon Sessions—Monday, June 20**

2.00 - 5.00 p.m.

Medicine

DR. H. GARFIELD KELLY, Kingston.

The Mechanism of Heart Failure.

DR. STEPHEN WHITTAKER, Warwick.

The Treatment of Heart Failure.

DR. PAUL DAVID, Montreal.

Indications for and Results of Mitral Valvulotomy.

DR. HUGH STANSFIELD, Vancouver.

Electrocardiographic Patterns in Atypical Acute Coronary Occlusion.

DR. KENNETH HARRIS, London.

Clinical Aspects of Atypical Coronary Disease.

DR. WILLIAM EVANS, London.

Treatment of Cardiac Infarction—Immediate and Late.**Afternoon Sessions—Wednesday, June 22**

2.00 - 5.00 p.m.

Medicine

DR. E. R. CULLINAN, London.

The Essential Nature, Effects and Treatment of Simple Obesity.**The Sprue Syndrome:**(a) DR. ALASTAIR CAMPBELL FRAZER, Birmingham.
Idiopathic Steatorrhœa.(b) DR. DOUGLAS G. CAMERON, Montreal.
Secondary Steatorrhœa.

DR. A. W. BAGNALL, Vancouver.

Post Menopausal Osteoporosis.

DR. GUY E. JORON, Montreal.

Diagnosis and Treatment of Acute Pyelonephritis in Diabetes Mellitus.**Afternoon Sessions—Thursday, June 23**

2.00 - 5.00 p.m.

Medicine

DR. DAVID A. LONG, London.

The Etiology of Rheumatic Fever.

DR. E. C. WARNER, London.

The Nature of the Physiological Disturbances in Chronic Pulmonary Emphysema.

DR. T. H. AARON, Edmonton.

The Modern Treatment of Chronic Pulmonary Emphysema.

DR. WILLIAM I. MORSE, Boston.

Investigation of the Hæmorrhagic Diatheses.

DR. JOHN P. GEMMELL, Winnipeg.

Choice of Treatment in Hyperthyroidism.**Afternoon Sessions—Wednesday, June 22**

3.00 p.m.

National Health Service*Chairman:* DR. R. W. RICHARDSON, Winnipeg.

DR. E. A. GREGG, London.

History of the Service.

DR. A. TALBOT ROGERS, Bromley.

The Family Doctor Service.

DR. T. ROWLAND HILL, London.

The Hospital Service.

DR. S. C. GAWNE, Liverpool.

The Public Health Service.**Afternoon Sessions—Monday, June 20**

2.00 - 5.00 p.m.

NeurologySIR GEOFFREY JEFFERSON, Manchester.
Integration of Coma.

DR. E. H. BOTTERELL, Toronto.

Hypothermia in Cerebral Vascular Surgery.

DR. W. M. LOUGHEED, Toronto.

Hypothermia for Neurological Surgery: Evaluation of the Method.

DR. HUGH GARLAND, Leeds.

Diabetic Neuropathy.

DR. ROWLAND HILL, London.

Some Problems of Peripheral Neuropathy.

DR. W. RITCHIE RUSSELL, Oxford.

Observations on Interstitial Neuritis.**Afternoon Sessions—Wednesday, June 22**

2.00 - 5.00 p.m.

Neurology

DR. DOUGLAS McALPINE, London.

Some Observations on the Diagnosis and Treatment of Multiple Sclerosis.

DR. MACDONALD CRITCHLEY, London.

Observations on Aphasia.

DR. WILDER G. PENFIELD, Montreal.

The Results of Cortical Excision in the Treatment of Focal Epilepsy.

MR. D. W. C. NORTHFIELD, London.

The Results of Treatment of Cervical Spondylosis with Neurological Manifestations.

Afternoon Sessions — Tuesday, June 21

2.00 - 5.00 p.m.

Obstetrics and Gynæcology

DR. DOUGLAS W. FREW, Edmonton.

What is Adequate Prenatal Care Today?

MR. S. BENDER, Liverpool.

Infertility.

DR. CARL TUPPER, Halifax.

Spontaneous Abortion—Combined Approach.

MR. JOHN PEEL, London.

The Management of the Diabetic Patient in Pregnancy.

DR. OTTO A. SCHMIDT, Winnipeg.

Induction of Labour—Its Use and Abuse.

Afternoon Sessions — Thursday, June 23

2.00 - 5.00 p.m.

Obstetrics and Gynæcology

DR. F. L. JOHNSON, Hamilton.

The Management of Breech Presentations.

MISS GLADYS HILL, London.

Functional Bleeding.

DR. PAUL LATOUR, Montreal.

The Early Diagnosis of Cancer of the Cervix.

MR. MALCOLM DONALDSON, London.

Cancer Education.

PROFESSOR DAVID STEWART, Kingston, Jamaica.

Treatment of Suppression of Urine Following Eclampsia and Preeclampsia.

Afternoon Sessions — Tuesday, June 21

2.00 - 5.00 p.m.

Occupational Medicine

DR. A. H. SELLERS, Toronto.

Some Observations on Industrial Morbidity Statistics.

DR. J. E. GOODWIN, Toronto.

Susceptibility to Noise—is it Predictable?

DR. IAN URQUHART, Toronto.

Problems of Resuscitation in Industry.

DR. J. H. BAILLIE, Toronto.

Some Considerations of Sickness Absenteeism in a Non-hazardous Industry.

DR. J. J. O'DWYER, London.

The Contribution of the Doctor to the Management Team.

Afternoon Sessions — Thursday, June 23

2.00 - 5.00 p.m.

Occupational Medicine

DR. JOHN ROGAN, London.

The Health of the British Coalminer.

DR. R. D. APPLEFORD, Hamilton.

The Detection of Diabetes in Industrial Workers by Periodic Blood Screening.

DR. C. G. SHAVER, St. Catharines.

Aluminum Oxide Abrasives—Preventive Measures to Control a Dust Hazard

DR. S. D. McLEAN, London.

Some Aspects of Health in the Oil Industry.

SURGEON COMMANDER F. P. ELLIS, R.N.

Environmental Health in the Royal Navy.

Afternoon Sessions — Monday, June 20

2.00 - 5.00 p.m.

Ophthalmology

MR. JAMES H. DOGGART, London.

Vessels of the Ocular Fundus as a Guide to Prognosis.

MR. TUDOR THOMAS, Cardiff.

On Advising a Corneal Graft.

DR. I. LLOYD JOHNSTONE, Worcestershire.

Tendon Grafting in Paralytic Squint.

DR. CHARLES DYSON, London, Ont.

Chordomata of Ocular Interest.

DR. HOWARD N. REED, Winnipeg.

Some Observations on the Results of Cataract Extraction.

DR. C. D. BAIRD, Chatham, Ont.

Diseases of the Meibomian Glands.

Afternoon Sessions — Wednesday, June 22

2.00 - 5.00 p.m.

Orthopædic Surgery

MR. H. JACKSON BURROWS, London.

Replacement of Bone by Internal Prostheses.

DR. J. E. BATEMAN, Toronto.

Management of Acute Nerve Injuries.

DR. J. M. JANES, Rochester.

Peripheral Vascular Surgery from the Standpoint of the Orthopædic Surgeon.

MR. J. P. JACKSON, London.

Results of Chemotherapy in Bone and Joint Tuberculosis.

DR. GEORGE F. PENNAL, Toronto.

The Thomas Splint.

MR. H. H. LANGSTON, Winchester.

A Plea for a Rational Outlook on the Internal Fixation of Fractures.

Symposium on Traumatic Paraplegia.

DR. A. JOUSSE, Toronto (*Chairman*).

Afternoon Sessions — Thursday, June 23

2.00 - 5.00 p.m.

Orthopædic Surgery

MR. PHILIP WILES, London.

The Etiology of Postural Defects.

MR. DENIS BROWNE, London.

The Causation of Certain Congenital Deformities and Their Treatment by Controlled Movement.

- DR. JEAN LECLERC, Quebec.
Bone Tumours and Biopsies.
- DR. F. P. PATTERSON, Vancouver.
Complications of External Pin Fixation in Orthopaedic Surgery.
- DR. G. L. BURKE, Vancouver.
Some Observations on the Feet and Legs in Childhood.
- DR. A. A. BUTLER, Montreal.
Evaluation of the Use of Hydrocortone in Orthopaedic Surgery.
- MR. J. P. CAMPBELL, Nottingham.
Treatment of Osteoarthritis of the Hip by Osteotomy.
- DR. R. GARIEPY, Montreal.
The Surgical Management of Arthritic Conditions of the Knee Joint.
- DR. J. N. SWANSON, Toronto.
Some Orthopaedic Problems Connected with Gouty Arthritis.

Afternoon Sessions — Tuesday, June 21

2.00 - 5.00 p.m.

Otolaryngology

- DR. DAVID H. BALLON, Montreal.
Review of Foreign Body Endoscopy Over a Period of Thirty Years.
- DR. R. E. GREENWAY, London.
Results of Cobalt Therapy in Malignancies of the Nose and Throat.
- DR. J. A. SULLIVAN, Toronto.
Clinical Testing of Vertigo.
- MR. VICTOR NEGUS, London.
Air Conditioning Mechanism of the Nose.

Afternoon Sessions — Wednesday, June 22

2.00 - 5.00 p.m.

Otolaryngology

- MR. TERENCE CAWTHORNE, London.
Facial Palsy.
- MR. RONALD MACBETH, Oxford.
The Treatment of Oesophageal Varices in Portal Hypertension by Means of Sclerosing Injections.
- DR. G. EDWARD TREMBLE, Montreal.
Some Observations on Respiratory Cilia with the Electron Microscope.
- DR. HOWARD MCCART, Toronto.
Parotid Tumours.

Afternoon Sessions — Monday, June 20

2.00 - 5.00 p.m.

Preventive Medicine

- PROFESSOR R. CRUIKSHANK, London.
The Epidemiology of Upper Respiratory Tract Infections.
- DR. G. DEMPSTER, Toronto.
Acute Respiratory Disease.
- DR. JOHN H. GARDINER, Toronto.
A Children's Heart Registry.

Afternoon Sessions — Wednesday, June 22

2.30 - 5.00 p.m.

Preventive Medicine

- DR. H. J. PARISH, London.
Combined Immunization.
- DR. A. R. FOLEY, Quebec, and
DR. JAMES M. MATHER, Vancouver.
Combined Immunization from the Viewpoint of the User in the Field.
- DR. P. J. MOLONEY, Toronto.
Antigenic and Immunological Aspects of Combined Immunization.

Afternoon Sessions — Tuesday, June 21

2.00 - 5.00 p.m.

Psychiatry

- DR. A. E. MOLL, Montreal.
The Psychopathology of Suicide.
- DR. G. C. SISLER, Winnipeg.
The Treatment of Suicidal Attempts.
- DR. ERWIN STENGEL, Beckenham.
The Social Significance of the Suicidal Attempt.
- PROF. AUBREY LEWIS, London.
Statistical Aspects of Suicide.

Afternoon Sessions — Thursday, June 23

2.00 - 5.00 p.m.

Psychiatry

- DR. WM. C. GIBSON, Vancouver.
Basic Sciences in Psychiatry—Physiology.
- DR. JOHN W. LOVETT DOUST, Toronto.
Basic Sciences in Psychiatry—Psychology.
- DR. DENIS LEIGH, London.
Basic Sciences in Psychiatry — Neuro-anatomy and Neuro-pathology.
- DR. W. C. M. SCOTT, London (Montreal).
Basic Sciences in Psychiatry—Psychobiology.

Afternoon Sessions — Wednesday, June 22

2.00 - 5.00 p.m.

Radiology**Diagnosis**

- DR. L. R. HARNICK, Toronto.
Diodrast Arthrography of the Knee, and Surgical Correlation.
- DR. R. A. MACPHERSON, Winnipeg.
Duodenal Ulceration without Deformity of the Bulb, A Clinical-Roentgenological Correlation in 106 Cases.
- DR. GUILLAUME GILL, Montreal.
Ureteral Block and Kidney Function.
- DR. JOHN WILKIE, Sheffield.
Intracranial Calcifications.

Afternoon Sessions — Thursday, June 23

2.00 - 5.00 p.m.

Radiology

Therapy

DR. ETHLYN TRAPP, Vancouver.

The Role of Irradiation in the Treatment of Carcinoma of the Corpus Uteri.

DR. JEAN BOUCHARD, Montreal.

Roentgentherapy in the Control of Malignant Neoplasm of the Brain and Brain Stem.

DR. RONALD C. BURR, Kingston.

Intracavity Irradiation of Carcinoma of the Bladder.

DR. EDITH PATERSON, Manchester.

Treatment of the Leukæmias.

Afternoon Sessions — Monday, June 20

2.00 - 5.00 p.m.

Surgery

MR. IAN FRASER, Belfast..

Tumours of the Small Intestine.

MR. A. DIXON WRIGHT, London.

Intestinal Obstruction.

PROFESSOR IAN AIRD, London.

Intrahepatic Biliary Obstruction.

MR. C. PATRICK SAMES, Bath.

Obstructions at the Lower End of the Common Bile Duct.

DR. ERIC M. NANSON, Saskatoon.

Œsophageal Hiatus Hernia.

MR. LAWRENCE A. ABEL, London.

Treatment of Ulcerative Colitis by Total Colectomy and Ileo-rectal Anastomosis.

MR. L. R. BROSTER, London.

Intersexuality.

Afternoon Sessions — Tuesday, June 21

2.00 - 5.00 p.m.

Surgery

Symposium on Cancer

MR. R. W. RAVEN, London.

The Present Position of the Treatment of Cancer of the Œsophagus.

MR. R. S. MURLEY, London.

The Assessment of Results in Breast Cancer.

MR. MICHAEL HARMER, London.

Bilateral Adrenalectomy in Breast Cancer.

DR. ARTHUR L. MURPHY, Halifax.

Cancer of the Mouth, An Outline of Treatment.

Symposium on Cardiovascular Diseases

MR. T. HOLMES SELLORS, London.

Intracardiac Surgery.

DR. EDOUARD D. GAGNON, Montreal.

Simultaneous Surgical Relief of Bivalvular Stenotic Lesions

PROFESSOR A. M. BOYD, Manchester.

Management of Intermittent Claudication.

MR. R. E. HORTON, Bristol.

The Use of Grafts in Arterial Disease of the Lower Limb.

DR. W. G. BIGELOW, Toronto.

The Effects of Hypothermia on the Risks of Surgery.

Afternoon Sessions — Wednesday, June 22

2.00 - 5.00 p.m.

Urology

MR. H. P. WINSBURY-WHITE, London.

Presidential Address. The Early Signs of Bladder Neck Disease.

DR. JOHN K. LATTIMER, New York.

The Role of the General Practitioner in the Treatment of Genito-Urinary Tuberculosis.

MR. LESLIE N. PYRAH, Leeds.

The Use of the Ileum in Genito-Urinary Surgery.

MR. A. W. BADENOCH, London.

Hæmaturia.

DR. J. L. THOMAS RUSSELL, Toronto.

Urinary Tract Infections.

MR. NOEL ADENEY, Bournemouth.

Vesical Neoplasms — a Provincial Surgeon's Bogy.

**DINNER OF THE MAIMONIDES
MEDICAL SOCIETY OF ONTARIO**

DEVELOPING out of the Mount Sinai Clinical Society, a new organization, the Maimonides Medical Society of Ontario, has recently been founded. Membership is open to all Jewish physicians qualified to practise in the province and eligible doctors are invited to communicate with the chairman of the Membership Committee, Dr. K. I. Freeman, 611 Bloor Street West, Toronto.

As one of the events of B.M.A.-C.M.A.-O.M.A. week in Toronto, the Maimonides Medical

Society is planning a dinner on the evening of Wednesday, June 22, at the Royal York Hotel. Special guests will be the Jewish doctors and their wives attending the meeting from overseas, and a cordial invitation is extended to physicians of the Jewish faith from elsewhere in Canada. Advance information of intention to be present should be sent to Dr. A. Leventhal, 425 Palmerston Boulevard, Toronto.

Following the dinner, the members and guests of the Maimonides Medical Society will attend the Annual General Meeting of the Canadian Medical Association and the President's Reception and Dance.

MEDICAL SOCIETIES

CANADIAN NEUROLOGICAL
SOCIETY

The Canadian Neurological Society will hold its seventh annual meeting in Toronto on June 16-19, 1955, just before the conjoint B.M.A.-C.M.A.-O.M.A. meeting, at which certain programmes on June 20-24 will also be of neurological interest.

The Society will be entertaining members of the Section of Neurology of the Royal Society of Medicine, the Association of British Neurologists, and the Society of British Neurological Surgeons. It is expected that U.S. neurologists will also be present. Registration for the C.N.S. meeting will start at Sunnybrook Hospital on Thursday, June 16, at 9.00 a.m.

The main points of the programme are outlined below:

Thursday, June 16 (2-5 p.m.): Symposium, "Centrencephalic Integration and the Brain-Stem Reticular System." Chairman: Wilder Penfield, Montreal; Participants: H. W. Magoun, Los Angeles; Denis Williams, London; John Bates, London; H. H. Jasper, Montreal. Discussion to be opened by Sir Charles Symonds, London.

Friday, June 17. Morning Session: F. L. McNaughton, Montreal: Presidential Address. Graham Weddell, Oxford: "Recent Observations on the Mechanism of Pain Sensibility." T. P. Morley and R. C. Hetherington, Toronto: "Traumatic Pneumoencephalus." P. C. P. Cloake, W. T. Cooke and G. S. Hall, Birmingham: "Neurological Associations of Steatorrhoea." J. S. Prichard and J. W. Scott, Toronto: "The Natural History of Simple Staring Spells." D. W. C. Northfield, London: "Tumours of the Fourth Ventricle." R. T. Ross, Winnipeg: "Dystonia Musculorum Deformans."

Afternoon Session: S. L. Sherwood, London: "Intraventricular Medication in Mental Patients." Murray L. Barr, London, Ontario: "The Sex Chromatin in Neurones of the Human Frontal Cortex and Sympathetic Ganglia." Valentine Logue, London: "The Surgical Treatment of Ruptured Aneurysms of the Anterior Cerebral and Communicating Arteries." C. G. Smith, Toronto: "Changes in the Length and Position of the Segments of the Spinal Cord with Changes in Posture in the Monkey."

Saturday, June 18. Morning Session: M. G. Saunders, Winnipeg: "Organization of the Dorsal Spinocerebellar Tract in the Cat." William Gooddy, London: "A Review of the Theory of Cerebral Representation." Theodore Rasmussen, Montreal: "Experiences with Hypophysectomy in Man Produced by Insertion of Beta Ray Emitting Pellets." J. A. V. Bates, London: "Stimulation of the Motor Cortex in Cases of Hemiplegia." E. Florey and H. McLennan, Montreal: "A Possible Transmitter Substance of Inhibitory Neurones." W. L. Donohue, W. A. Hawke and W. S. Keith, Toronto: "Intracranial Tumours in Infancy." J. N. Cummings, London: "Some Chemical Aspects of Demyelinating Disease." Afternoon Session: Murray Falconer, London: "Some Aspects of the Investigation and Surgical Treatment of Temporal Lobe Epilepsy." Denis Williams, London: "Structure of Emotions Reflected in Epileptic Experiences." Donald B. Tower, Bethesda, Md.: "A New Approach to the Control of Seizures with L-Glutamine and L-Asparagine." W. Blackwood, London: "Brain Biopsy in Children with Progressive Dementia." William Feindel, Montreal: "Surgical Treatment of Small Brain Tumours Signalled by Focal Cerebral Seizures."

Some papers will also be read by title.

ABSTRACTS from current literature

MEDICINE

Endocardial Fibroelastosis: A Factor in Heart Disease of Obscure Etiology.

THOMAS, W. A. *et al.*: NEW ENGLAND J. MED., 251: 327, 1954.

Despite the great advances in recent years in the understanding of the etiology of heart disease, the pathological basis has remained obscure in isolated cases. The authors reviewed the material represented in 10,000 autopsies performed at the Massachusetts General Hospital over the past 25 years. Careful study was carried out of all cases labelled cardiac disease of unknown cause (such as idiopathic cardiac hypertrophy, Fiedler's myocarditis, endocardial fibroelastosis and even "atypical beriberi"). Cases were not included in the study if there was any clinical or morphological indication of previous hypertension, valvular disease, significant congenital defects, cor pulmonale or coronary sclerosis.

Twenty of the group of 24 cases of heart disease of obscure etiology were found to be endocardial fibroelastosis. While symptoms did not arise in some patients until adult life, the authors consider this condition to be congenital and probably familial. Heart failure is probably brought about by interference with cardiac contraction because of thickening of the endocardium.

NORMAN S. SKINNER

How Safe is X-ray and Fluoroscopy for the Patient and the Doctor?

CLEIN, N. W.: J. PEDIAT., 45: 310, 1954.

The trained radiologist is well acquainted with the dangers and limitations of fluoroscopy, but this is usually not true of the occasional user of x-ray and fluoroscopic equipment. Every effort must be made to provide adequate protective and measuring devices for physicians and patients and others exposed to radiation; they should be properly instructed in their use. The author points out the attendant hazards of x-radiation, especially to the blood and blood-forming organs, and also the effects upon reproduction. March found evidence of leukæmia in radiologists over a fifteen-year period to be about ten times as great as in nonradiologists.

The author measured the amount of scatter radiation received by the operator during fluoroscopy (weekly, over a one-year period); the results show that more than 0.4 r. was received over the chest, while 0.45 r. was received at the pubic region per week. With additional simple lead shielding on the sides of the machine the amount of radiation was cut to 0.1 r. per week, about one-fourth the previous exposure. From composite measurements of the radiation received over various areas of the body for many weeks, the author found that the pubic area and the left chest received even more radiation than the right chest and the back because they are closer to the tube. He considers that these areas are more exposed to scatter radiation from the rays between the table top and the screen and the table top and the tube underneath. The operator stands in front and near the foot of the table and manipulates the screen with his right hand while the left hand regulates the shutter mechanism.

The physical problems of fluoroscopy may be divided into two principal categories: those concerned with radiation hazards to patient and physician, and those concerned with poor visibility during examination. The diagnostic study should be carried out where the field of vision is restricted by the fluoroscopic shutters to the smallest size consistent with adequate vision. The time

of exposure should be reduced to the shortest possible interval consistent with a complete examination. Other factors must be known, such as the kilovolts applied to the roentgen tube, the target table top distance, and the filtration to the roentgen beam. In general, procedures that reduce the radiation exposure to the patient also reduce exposure to the fluoroscopist. Lead rubber gloves and aprons do not protect the head, neck and shoulders. At the present time no manufacturer of fluoroscopic equipment publishes information on reduction of exposure. The lead glass covering the screen appears to be effective in preventing the transmission of significant quantities of direct radiation to which the doctor is exposed.

Almost all the intelligence recorded on a fluoroscopic screen is appreciated by the observer within a few seconds after the image has appeared. Long periods of further scrutiny are usually of little value. The speed of intelligent appreciation by an observer depends on his experience.

A national standardized radiation diary system has been recommended. This diary should contain a record of all previous radiation exposures for any patient. It would include all exposures to x-rays, as well as to radium and isotopes, and other forms of radiation. The patient should retain this record. The danger to the chance observer or the patient is negligible. It is the daily exposure month after month and year after year from which the physician must be guarded. Fortunately, protection against scattered radiation is easy to attain by present technique.

W. F. T. TATLOW

Coma and Allied Disturbances of Consciousness in Hypopituitarism.

CAUCHEY, J. E. AND GARROD, O.: BRIT. M. J., 2: 554, 1954.

In 17 cases of hypopituitarism the patients showed disturbances of consciousness which varied in severity from mild confusion, hypersomnia, and defective cerebration to stupor and profound coma. The immediate precipitating factors were numerous, and included operations in the vicinity of the pituitary fossa, pituitary apoplexy, infections, hypoglycaemia, drugs and anaesthetics, electrolyte disturbances, water intoxication, and cerebral anoxia.

Prolonged coma followed intracranial operations on four patients with pituitary tumours; all the patients had hypogonadism, but only two had clear evidence of adrenal or thyroid failure. A similar type of coma followed operation on a pituitary eosinophil adenoma in a patient with acromegaly but with minimal evidence of hypopituitarism. After operation these patients failed to regain consciousness and remained stuporous or comatose for several days (one for as long as six weeks) before recovering. The clinical features were remarkably uniform. All the patients recovered but showed complete amnesia for the period of coma. The authors also describe a case of so-called pituitary apoplexy; this is a rare syndrome caused by haemorrhage into a pituitary adenoma.

Patients with hypopituitarism usually sleep well and for long periods, but infections often aggravate their hypersomnia and may cause mental confusion or coma. They describe two cases in which coma was precipitated by infection.

Hypoglycaemia may occur spontaneously in hypopituitarism, and also during infections following injections of insulin. As in Addison's disease, so also in hypopituitarism, there is hypersensitivity to drugs and anaesthesia.

It is still uncertain to what extent the pituitary gland controls the adrenal secretion of mineralocorticoids. In two patients, a sodium-losing crisis with coma occurred because of pituitary necrosis. Although collapse seldom occurs spontaneously in these patients, loss of sodium ion during surgery, infections, or gastro-enteritis is not

well tolerated, and may be a critical factor in precipitating coma.

Patients with hypopituitarism cannot excrete a water load rapidly, a failure which is readily corrected by cortisone. These patients are more prone, therefore, to water intoxication; the authors describe a case in which this happened. Six patients were subject to hypotensive postural faints which seemed to be due to cerebral anoxia. Patients with hypopituitarism are usually intolerant to cold. One patient became mentally confused during cold weather.

Many authors have stressed the importance of hypoglycaemia as a cause of hypopituitary coma, but the present authors consider hypoglycaemia an unusual finding. In severe hypopituitarism the centres of consciousness are probably unduly vulnerable because of changes within the cerebral cells resulting from endocrine deficiencies, and from impairment of that part of the defence mechanism which is mediated through the pituitary-adrenal axis. If certain post-operative cases in which local factors may be important can be excluded, it would seem that disorders of consciousness are unlikely to arise in hypopituitarism unless the peripheral endocrine failure is well advanced.

Poor adrenal function is a more constant finding than thyroid failure in these cases; cortisone effectively protects consciousness during periods of metabolic stress.

In the diagnosis of hypopituitary coma, signs of hypogonadism should arouse suspicion. Further suggestive findings are loss of pigment in the nipples and areolae in the female, and, in both sexes, pallor and a soft thin skin. In severe or long-standing cases the patient may present the classical appearance of myxoedema.

A combination of hypotension, azotæmia, and hæmoconcentration suggests loss of sodium from adrenal failure; in a confused or drowsy patient a very low plasma sodium, with normal blood urea and normal or slightly lowered blood pressure, suggests water intoxication.

It is likely that with regular cortisone therapy patients will be protected from hypersomnia and "hypopituitary coma", provided that the daily dose is increased during intercurrent infections, surgery, and other stresses. Oral cortisone, 12.5 to 25 mgm. a day, should be given indefinitely to all patients with hypopituitarism who show signs of diminished adrenocortical function. Testosterone seems to afford incomplete protection against the risks of coma. Wherever possible, general anaesthesia should be avoided and surgery restricted to emergencies. The insulin tolerance test is probably an unjustifiable risk when the diagnosis of hyperpituitarism can be made by other means.

In the treatment of "hypopituitary coma", a careful search should be made for signs of a precipitating infection and appropriate antibiotic therapy started at once. If the body temperature is very low, the patient should be immersed in a warm bath. On the supposition that hypoglycaemia may be present, glucose should be given by mouth if the patient can be roused, or by intravenous injection if in coma. Hydrocortisone (compound F) is preferable to cortisone, and an infusion of 50 to 100 mgm. of hydrocortisone alcohol dissolved in 250 to 500 ml. of isotonic saline should be given as soon as possible. If hydrocortisone is not available, 50 to 100 mgm. of microcrystalline cortisone acetate (Cortone) can be given intravenously. Thereafter 50 mgm. of cortisone acetate should be given six-hourly by nasal tube, which should be kept *in situ* for feeding purposes, until consciousness has been regained.

It may be wise to give 5 mgm. of deoxycortone during the first few days because cortisone may initially increase the sodium output. If there is excessive water retention, cortisone will correct this. Thyroid extract and testosterone are not of much value in the management of the acute condition. However, if there is obvious myxoedema, thyroxine or thyroid extract should be given as well as cortisone and deoxycortone with full awareness that the metabolic effects will be delayed.

W. F. T. TATLOW

Pancreatitis.

ZOLLINGER, R. M., KEITH, L. M. JR. AND ELLISON, E. H.: *NEW ENGLAND J. MED.*, 251: 497, 1954.

Acute and chronic pancreatitis are of frequent occurrence, and because of the lack of a definite clinical picture the diagnosis is often missed. Pancreatitis should be considered in the differential diagnosis of all cases of abdominal pain; blood amylase determinations should be routine since a significantly elevated blood amylase level is pathognomonic of acute pancreatitis. Since the amylase level quickly returns to normal, the test must be carried out within two or at most three days of onset of the attack. For a day or two longer the amylase level in peritoneal fluid is diagnostic, and it is safe and practical to aspirate such fluid with a 20-gauge needle inserted through the midline of the abdomen just below the umbilicus.

Other helpful diagnostic features in acute pancreatitis are radiological findings of a "sentinel" loop of gas-filled small bowel, gallstones (since biliary disease is found in 50% of cases of pancreatitis) and calcification within the pancreas (indicative of recurrent attacks of pancreatitis superimposed upon the chronic condition).

Operation is to be avoided in acute attacks. Treatment consists in placing the pancreas at rest by gastric suction and neutralization of gastric acidity; feeding by mouth should be avoided. Pain should be relieved by demerol, not by morphine which causes spasm of the sphincter of Oddi, and splanchnic block should rarely be required. After the acute attack has subsided, the patient's condition should be thoroughly investigated. Biliary tract disease should be surgically corrected. Continued medical therapy should be aimed at inhibiting pancreatic secretion by diet and vagus-blocking drugs, such as atropine, Bantline, or Pro-Banthine.

Surgery is of great value in treating chronic pancreatitis but the type of operation must be based on extensive and careful study of each case. Sphincterotomy, vagotomy, partial gastrectomy, biliary shunts and, probably, retrograde anastomosis of the pancreatic duct to the jejunum, all have their place in the therapy of the chronic phase of pancreatitis. NORMAN S. SKINNER

Fat Intake, Serum Cholesterol Concentration, and Atherosclerosis in the South African Bantu. Part I, Low Fat Intake and the Age Trend of Serum Cholesterol Concentration in the South African Bantu.

WALKER, A. R. P. AND ARVIDSSON, U. B.: *J. CLIN. INVEST.*, 33: 1358, 1954.

During the past few decades, numerous experimental studies in animals and man have been made on the effects of overnutrition and undernutrition on blood cholesterol values and their bearing on the pathogenesis of atherosclerosis. Populations subjected to dietary restrictions, which invariably include reduced fat intake, have been shown to have lower cholesterol values than when dietary conditions returned to normal. Similarly, populations used to a high intake have higher mean serum cholesterol values. The evidence also indicates that the rise in serum cholesterol which occurs with age is influenced by the amount of fat customarily consumed.

In the U.S.A., Keys and his associates observed a sharp regular rise in serum cholesterol levels from youth to late middle age (51 to 60 years), followed by a reduction of values; whereas in a comparable series of Italians, who are used to a much lower fat intake, it was found that the mean serum cholesterol level began on approximately the same level and rose until the middle 30's.

The present study was made to determine the age trend of serum cholesterol concentration in 218 urban

South African Bantu from 15 to 93 years, whose average intake of fat is less than half that usual in the U.S.A. and also less than half that of the Italian groups studied.

Up to 40 years, the differences between mean values obtained among the Bantu and in Minnesota by Keys and his associates were not significant. Thereafter, the means of the Bantu groups are significantly lower ($P < 0.01$). The regression curves of the Bantu and the Minnesota data for the group from 17 to 45 years differ significantly in slope ($P < 0.05$). Groups of rural Bantu from other territories, accustomed to a low fat diet and in a good state of health, were also found to have low mean cholesterol values. Urban Bantu on a Europeanized diet with an increased fat intake had a significantly higher mean serum cholesterol concentration than corresponding groups of rural (though not urban) Bantu on their usual low fat-content diet. The evidence suggests that racial differences, state of health, caloric deficiency, low cholesterol intake, and pathology and dysfunction of liver and pancreas have little responsibility for the low serum cholesterol values. The main dietary influencing factor may well be the habitually low fat intake of these people, although further dietary factors may be implicated, and are possibly related to the high residue diet of these people. R.R.

Restless Legs.

NORDLANDER, N. B.: *BRIT. J. PHYS. MED.*, 17: 160, 1954.

Although it exists in a more or less severe form in about 5% of a normal population, the syndrome of restless legs is seldom treated in the medical literature. The reason for this may be that the disease is not a deadly one; most patients never visit a doctor for it, and if they visit a doctor for another reason they do not mention their restless legs until directly asked. The syndrome is a sort of paræsthesia, a crawling sensation felt deeply in the legs, "in the very bone marrow," sometimes amounting to real pain. The symptoms are as a rule bilateral and start when the patient has gone to rest. In a few cases they occur during the day. The paræsthesiæ torment the patient and force him to move his legs about in the bed or to get up for hours of restless walking in the room.

Salicylates or barbiturates may ameliorate the condition in some cases, but vasodilator drugs such as Prisol or Doryl have hitherto been the treatment of choice for these patients, and assist about two-thirds of them. The paræsthesiæ are often accompanied by cold feet and a feeling of weakness in the legs, but if a sympathectomy is performed and the leg gets warm, they do not disappear. The syndrome is more common in women and a few conditions are known to provoke it, such as pregnancy, poliomyelitis, certain drugs, vitamin deficiency and prolonged exposure to cold. In three cases of anæmia the restless legs syndrome developed parallel with the anæmia and disappeared when the anæmia was cured by blood transfusions. The author has tried intravenous iron therapy and found that as a result of one or two injections the paræsthesiæ disappeared after a day and remained absent for a long time. Thus ten patients with iron-deficiency anæmia were entirely cured of their restless legs for months; in some, relapses have been relieved by another injection. Intravenous injection of 20 ml. of a 10% dextran solution gave excellent results in one case.

The author suggests that several explanations are possible for this polypharmaceutical success. First, the syndrome is characterized by great spontaneous variations, sometimes being much worse in the spring and summer and relatively slight in the winter. Fatigue, convalescence, menstruation and other conditions with decreased general resistance are apt to provoke the syndrome, and therefore it is rather difficult to evaluate the effect of treatment. Second, the therapeutic effect of so many different measures may indicate that several quite

different mechanisms may cause the syndrome. Third, there may be a common mode of action of the different drugs used (fixation to the reticulo-endothelial system) and the author suggests that the different remedies cure the paræsthesiæ by blocking the reticulo-endothelial system. W. F. T. TATLOW

SURGERY

Major Vascular Complications of Intervertebral Disc Surgery.

HARRISON, S. P.: ANN. SURG., 140: 342, 1954.

A 22-year-old patient developed advanced signs of heart failure from an arteriovenous fistula five months after removal of a ruptured intervertebral disc between L4 and L5. The fistula between the left common iliac artery and vein was repaired, with immediate recovery.

Inquiries among a number of prominent surgeons led to the compilation of a list of 30 similar injuries. In over half the cases the injury was not evident at the operation for disc protrusion. All the injuries apparently occurred in competent hands in spite of gentle manipulation. In one case the pituitary forceps bit a hole in the ileum.

Variations in the thickness of the anterior longitudinal ligament and the annular ring, pressure due to the prone position and the use of a biting instrument rather than a curette led to the accident. BURNS PLEWES

Abdominal Actinomycosis.

ARMITAGE, G. AND SMITH, I.: BRIT. J. SURG., 42: 77, 1954.

In reporting a case of actinomycosis involving the left lower quadrant, proved by biopsy and cured by penicillin, a review of such infections and antibiotic treatment is presented from Leeds. Of nine patients in 15 years only three did not receive adequate penicillin treatment; two died. Of six cases receiving adequate penicillin treatment, four were cured in 80 days and one in 289 days; another did not respond till streptomycin was added. Three of four women of childbearing age who had abdominal actinomycosis now complain of sterility. Three of the nine cases were clinically diagnosed as carcinoma.

Actinomycosis develops in the abdomen when there has been a breach of the bowel wall (as from appendicitis or perforated duodenal ulcer) and the fungus escapes into tissue spaces.

It is recognized that penicillin administration in large doses (2 to 10 mega units per day for two months) is frequently an effective treatment. Some strains are resistant to penicillin. Other antibiotics (streptomycin, chloramphenicol, aureomycin and terramycin) are useful against certain strains. The difficulties of culture and sensitivity tests are recognized. BURNS PLEWES

Closed Abdominal Injuries.

CLARKE, R.: LANCET, 2: 877, 1954.

Early exploration of the abdomen in cases in which closed abdominal injury is suspected carries with it the risks that it may prove unnecessary, and that the trauma of the operation may prejudice the patient's recovery if other injuries are present. Nevertheless the author of the present article is convinced that exploratory laparotomy is not practised nearly often enough in cases of suspected closed abdominal injury. He analyses data from a series of 107 patients operated on at the Birmingham Accident Hospital for closed abdominal injuries. Of

these 24 died. During the same period 13 patients with abdominal injuries died without operation. In the series described, only 12 abdomens were explored and found to contain no injury. Among the other 83 there were 27 cases of ruptured spleen, 10 of ruptured kidney, and eight of ruptured liver. The author points out that in several cases of rupture of the spleen the physical signs were less than in some patients with negative intra-abdominal findings. He urges that operation should not be deferred, where rupture of the spleen is suspected, until the blood pressure is falling and the pulse rate rising. Only one of the deaths which took place without operation could be attributed to an error of diagnosis. In most of the remaining cases of death without exploration there were other injuries sufficient to kill. Only one patient died after laparotomy with negative findings.

Abdominal injury requiring operation can rarely be ruled out on a single examination. A complaint of abdominal pain after injury is enough to warrant a period of observation with repeated examination by an experienced surgeon, and deterioration of any kind in the patient's condition is a signal for serious consideration of exploration. The only type of injury in which conservative treatment is desirable is the localized blow in the loin associated with hæmaturia, without a local mass and with no suspicion of injury to viscera other than the kidney. S.G.

Occlusive Disease of the Aorta and its Treatment by Resection and Homograft Replacement.

DE BAKEY, M. E., CREEH, O. JR. AND COOLEY, D. A.: ANN. SURG., 140: 290, 1954.

Thrombo-obliterative disease of the terminal aorta was described as a clinical entity thirty years ago by Leriche, who recommended bilateral lumbar sympathectomy. It is only recently that resection and homograft replacement has been successfully accomplished, restoring the natural flow to the lower extremities. Twenty-two cases, so treated are reported—ten complete occlusions and twelve partial. Complete occlusion occurs in younger men and is marked by progressive claudication, sexual impotence and pain in the buttocks and thighs; hypertension is present in one-third of the cases. Aortography shows the extent of the disease. There were two deaths. All but four of the remainder were greatly improved. BURNS PLEWES

OBSTETRICS AND GYNÆCOLOGY

The Rationale for Radical Panhysterectomy and Pelvic Node Excision in Carcinoma of the Corpus Uteri.

BRUNSCHWIG, A. AND MURPHY, A. I.: AM. J. OBST. & GYNÆC., 68: 1482, 1954.

A discussion based upon surgical treatment and pathological study of adenocarcinoma of the endometrium in 74 patients is presented to emphasize the following points:

1. Endometrial carcinoma of the corpus uteri may spread in a fashion similar to epidermoid carcinoma of the cervix, i.e., by invasion of parametria, bladder, rectum, and metastasis to pelvic lymph nodes, progressively, before spread to extra-pelvic sites occurs.

2. Local direct spread to bladder and pelvic colon may occur before metastasis to pelvic nodes.

3. It appears that simple total hysterectomy for endometrial carcinoma does not represent the maximum surgical effort possible.

4. When the patient's condition permits, a radical panhysterectomy with pelvic node excision is indicated. The

mortality can be held to a minimum. In patients who are not good risks a Wertheim type of radical hysterectomy should be performed.

5. In advanced and/or recurrent cases of endometrial carcinoma some type of exenteration operation may still offer the patient a chance for long survival.

6. Removal of pelvic lymph nodes in the surgical treatment of endometrial carcinoma is consistent with modern principles of cancer surgery. There is no reason to assume that the surgery of endometrial cancer should constitute a sole exception.

ROSS MITCHELL

Treatment of the Acute Toxæmias of Pregnancy with Hypotensive Drugs.

KISTNER, R. W.: J. OBST. & GYN. BRIT. EMP., 61: 463, 1954.

Thirty-seven patients with pre-eclampsia, two eclamptic patients, 7 patients with essential hypertension and superimposed pre-eclampsia, and 2 patients with essential hypertension alone were treated with one or more hypotensive drugs. No sedation was given.

Veratrone, Verenteral and Apresoline were utilized separately and in conjunction. Tetraethylammonium chloride was employed for determination of the type of hypertension present.

Veratrone in acute toxæmia produced a constant hypotension and bradycardia, but was usually associated with nausea and vomiting. Temporary diminution in urinary output was noted during the period of maximum hypotension. Verenteral produced similar results but in four cases was associated with ventricular extrasystoles. In acute toxæmia, Apresoline produced a marked hypotension and tachycardia. Headaches occurred in 32%. Urinary output was not suppressed. Subjective and objective clinical improvement occurred routinely following administration.

The hypotensive drugs, used without sedation, offer a physiological mechanism for relief of the vasospasm associated with the acute toxæmias. While these drugs are not as yet recommended as complete treatment for the toxæmias of pregnancy, they offer definite promise and are worthy of extensive pharmacological and clinical investigation.

ROSS MITCHELL

PÆDIATRICS

Management with Procaine Amide (Pronestyl) of Pylorospasm in Infants.

SADOVE, M. S. et al.: J. A. M. A., 154: 1328, 1954.

Procaine amide, synthesized in 1949, has great advantages over procaine in that it is longer-acting and causes less nervous system stimulation as well as less vasomotor depression. It occurred to the authors that it might replace procaine in the alleviation of spastic and related conditions of the upper alimentary tract and could be administered orally to infants.

Reported in this article are its effects on the pylorospasm encountered in six newborn infants. Four of the cases responded and showed marked improvement. Although it did not appear to be of preoperative benefit in two cases of congenital hypertrophic stenosis, it was helpful in their postoperative management. The experience of the authors leads them to believe that administration of the drug may prove valuable as a therapeutic test since infants benefiting immediately from its administration did not have stenosis or tumours unlike those in which it had no immediate effect. The authors caution that infants should be observed carefully for side-reactions, although they found these to be minimal. They further point out that research is proceeding to determine the drug's exact mode of action in the gastrointestinal tract.

ISABEL M. LAUDER

Protruded Lumbar Intervertebral Discs in Children.

WEBB, J. H., SVIEN, H. J. AND KENNEDY, R. L. J.: J. A. M. A., 154: 1153, 1954.

Although protruded lumbar intervertebral discs are rarely encountered in childhood and adolescence, this condition should be suspected as a cause of low backache and sciatic pain in these age groups. The authors have studied 6,500 cases of operation for protruding discs. Sixty of the patients were under 18 years of age and the youngest was a 12-year-old girl. The clinical and pathological features in these young patients did not differ significantly from those found in older patients. A history of trauma could usually be related to the onset of symptoms. As in adults, the physical findings varied from minimal limitation of the motion of the back to severe spasm of the erector spinæ muscles, changes in reflexes and neurological defects. Myelography and removal of the lesion should be considered if a thorough trial of conservative therapy has failed to provide relief. Good results may be anticipated.

ISABEL M. LAUDER

THERAPEUTICS

Studies in Myasthenia Gravis: Present Status of Therapy with Octamethyl Pyrophosphoramide (OMPA).

OSSERMAN, K. E. AND KAPLAN, L. I.: ANN. INT. MED., 41: 108, 1954.

The authors report on the effect of transferring 12 myasthenia gravis patients from neostigmine to OMPA therapy in order to reduce the frequency of dosage of neostigmine or to achieve greater smoothness of therapy. Of this group three were resistant to neostigmine; their ages varied from 18 to 50 years, the sex incidence was equal, and the onset of the disease varied from a few months to 15 years previously. Five were considered to have severe myasthenia gravis, two had inoperable malignant thymomas, and the remaining five were moderately ill myasthenic patients. The daily dosage of neostigmine for each patient had varied from 90 to 480 mgm.

All patients were admitted to hospital and had daily estimations of red cell and plasma cholinesterase levels, with daily edrophonium chloride tests as a means of management in the latter part of the work. Of the 12 patients transferred to OMPA five died; two deaths were due to cholinergic crises probably because of drug intoxication with OMPA, and two to malignant thymomas with metastases; one "brittle" uncontrollable myasthenic patient developed terminal bronchopneumonia. Of the seven living patients only one remains on OMPA medication.

The authors conclude that the use of OMPA does not satisfactorily solve the problems of the patient with myasthenia gravis who has developed refractoriness to neostigmine; they conclude that the range between toxic and therapeutic dosages of OMPA is too narrow to warrant its continued use in the treatment of myasthenia gravis.

W. F. T. TATLOW

Role of Antibiotics in Therapy of Acne.

ROBINSON, H. M. JR.: A. M. A. ARCH. DERMAT. & SYPH., 69: 414, 1954.

Three hundred and ninety-one patients with acneiform eruptions were treated with penicillin, chlortetracycline, chloramphenicol, oxytetracycline, erythromycin and carbomycin, systematically in one series and by local application in another.

Penicillin by injection had little value in the treatment of acneiform eruptions, but the so-called broad-spectrum

antibiotics gave good results in acne vulgaris and acne conglobata. A careful history, complete physical examination and a close follow-up of the patient including laboratory analyses are essential in view of the side-effects liable to develop with prolonged administration of these drugs. It is suggested that two weeks of treatment be alternated with two weeks of interrupting antibiotic therapy. It was concluded that oxytetracycline and chlortetracycline gave the best results and caused the smallest number of serious side-effects; their drawback is the high incidence of gastrointestinal reactions. Erythromycin was found of great value, with a minimum of undesirable reactions.

The author recommends that antibiotics should not be used locally in the treatment of acne. Only a few cases respond favourably and local application over long periods may lead to contact allergy. B. L. FRANK

Investigation of Steroid Metabolism in Pulmonary Tuberculosis.

ABDERHALDEN, R. AND ABDERHALDEN, G.: ZTSCHR. VITAMIN- HORMON- U. FERMENT-FORSCH., 5: 114, 1953.

Following their earlier finding that there is dysfunction of the adrenal cortex in 80% of cases of advanced tuberculosis, and in 36% of less advanced cases, the authors determined 17-ketosteroid urinary excretion in 340 patients and corticosteroid excretion in a smaller number. Some of the cases were followed up for one and a half to two years. While in healthy women the average urinary 17-ketosteroid excretion in 24 hours was found to be 10 mgm., and in healthy men 16 mgm., the corresponding figures in patients suffering from advanced tuberculosis were 4.2 mgm. and 8 mgm. respectively. Figures for corticosteroid excretion largely ran parallel to those for 17-ketosteroids.

Comparison of the levels of 17-ketosteroid and corticosteroid excretion with the clinical picture and the progress of the disease demonstrated that high values correspond to a favourable prognosis, and low steroid values indicate an unfavourable outcome. In the cachectic state, 17-ketosteroid excretion was as a rule extremely small, and the authors feel that the cause of death in pulmonary tuberculosis, and perhaps also in other infectious diseases, may be adrenocortical failure.

These clinical observations were confirmed experimentally in rabbits with tuberculosis and staphylococcal septicaemia. Following infection, there was first a steep rise in 17-ketosteroid excretion; as the disease progressed this was followed by a steady fall, until shortly before death there were hardly any 17-ketosteroids in the urine.

B. L. FRANK

PUBLIC HEALTH

Can Man be Protected Against Rabies?

MEYER, K. F.: BULL. WORLD HEALTH ORGAN., 10: 845, 1954.

Postinfectious antirabies treatment helps to prevent the development of rabies in man; the factors in the acquisition of an immunity effective against rabies in the bitten individual must be more clearly understood, and passive immunization must be carefully compared with active immunization. Only in the face of epizootics among foxes, coyotes, skunks, or other carnivores is the population sufficiently aroused to demand effective action, although the annual heavy expenditures on postinfectious immunization could be eliminated if rabies were to be suppressed or eradicated.

Under the impact of postwar experience with epizootics and of the energetic drive of veterinary public-

health services, serious consideration is now being given to the second step in the control of rabies, elimination of reservoirs. There are two epidemiological types of rabies: the disease in the natural reservoir in wild animals, and the disease in the world-wide domestic animal reservoir, maintained in densely populated regions where the love for pets creates a complex, partly domesticated dog and partly wild dog reservoir. The elimination of rabies from dogs is the most urgent, most challenging problem. The combating of rabies on a large scale is successful only when the legal regulations are properly and inflexibly applied for a period covering the longest latency of the disease. The traditional veterinary police measures attempt to eliminate the disease among dogs by quarantine and restraint. The procedures and specific measures recommended by various conferences are well known, but the wide variety of measures often face insurmountable difficulties in enforcement, because of social or religious attitudes. In general, dog owners refuse to accept responsibility. The only feasible approach is through education of the public. As a rule, the population of an area where rabies suddenly appears is not prepared to grasp the seriousness of the problems the public-health officer and the public-health veterinarian face.

No general measure has proved so effective as quarantine of dogs. This practice has prevented the establishment of rabies in many islands—for example, Australia and Hawaii. Regulation of the dog population includes, aside from the registration and licensing of dogs, impounding or destroying ownerless stray dogs, isolating and observing animals bitten by rabid animals, and leashing and muzzling all owned dogs, while a control campaign is under way. A more accurate method of taking the dog census must be devised. Without an accurate census the magnitude of the control task cannot be estimated, nor can the public be informed of the expenditures required.

The persistent recurrence of rabies indicates that attempted control by the classical procedures has not succeeded. This type of control does not suppress disease when crowding and intimate contact with latently infected animals cannot be prevented. Health officials have for many years advocated mass vaccination of dogs. The author reviews at length the methods of protective immunization and concludes that, as a supplement to the traditional method, mass vaccination of dogs is important in eradicating urban rabies and protecting man. He shares with Vittori the belief that mass vaccination of dogs should be regarded as a general method of prophylaxis.

The author also discusses the measures for the supervision of vectors of rabies other than dogs. On this continent, the Arctic fox and wolf have been proved to be infected in three widely separated areas of the northwest. This focus constitutes a reservoir from which dogs affected by the so-called Arctic-dog disease, other animals, and man, may be infected. There appears to be some relation between the migration of lemmings and outbreaks of rabies in Arctic foxes. During an epizootic in dogs it was proved that rabies is well established in Alaska in a reservoir consisting principally of foxes.

In the U.S.A., serious epizootics of rabies in foxes have been recognized since 1872. Skunk rabies in Kansas and Arizona, coyote rabies on the west coast and in New Mexico, and timber-wolf rabies in eastern North America have all been important in the history of this disease on the North American continent.

For the protection of man, and to reduce losses due to rabies in livestock, three methods have been followed: self-eradication of the disease by permitting it to run its course in the wild, decimating the reservoir of animals; indiscriminate killing of susceptible wildlife to reduce the possibility of disease being spread from animal to animal; and prophylactic inoculation of livestock and of the dog population exposed to wild-reservoir hosts. W. F. T. TATLOW

FORTHCOMING MEETINGS

CANADA

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS, Winnipeg, Manitoba. (Dr. P. H. T. Thorlakson, Chairman.) April 25-26, 1955.

CANADIAN HOSPITAL ASSOCIATION, Biennial Meeting, Ottawa, Ont. (Executive Director: Dr. W. D. Piercey, 280 Bloor Street West, Toronto 5, Ont.) May 9-11, 1955.

BRITISH COMMONWEALTH MEDICAL CONFERENCE OF THE BRITISH MEDICAL ASSOCIATION, Toronto, Ontario. (Dr. A. D. Kelly, Canadian Medical Association, 244 St. George Street, Toronto 5.) June 14-16, 1955.

CANADIAN SOCIETY OF MICROBIOLOGISTS—5th Annual Meeting, Winnipeg, Man. (University of Manitoba, Winnipeg, Man.) June 15-17, 1955.

COMBINED MEETING OF THE CANADIAN PÆDIATRIC SOCIETY, SOCIÉTÉ CANADIENNE DE PÉDIATRIE, BRITISH PÆDIATRIC ASSOCIATION, AMERICAN PÆDIATRIC SOCIETY AND THE SOCIETY FOR PÆDIATRIC RESEARCH, Quebec City, Quebec. (Dr. J. C. Rathbun, Secretary-Treasurer, 526 Waterloo Street, London, Ont.) June 15-18, 1955.

BRITISH MEDICAL ASSOCIATION, CANADIAN MEDICAL ASSOCIATION, ONTARIO MEDICAL ASSOCIATION, Conjoint Meeting, Toronto, Ont. (Dr. A. D. Kelly, General Secretary, Canadian Medical Association, 244 St. George Street, Toronto 5, Ont.) June 17-24, 1955. (Scientific Sessions June 20-24.)

CANADIAN ACADEMY OF ALLERGY, Annual Meeting, Royal York Hotel, Toronto, Ont. (Dr. P. A. Ryan, Acting Secretary, 229 St. Clair Avenue West, Toronto 7, Ont.) June 21, 1955.

CANADIAN PUBLIC HEALTH ASSOCIATION AND ALBERTA PUBLIC HEALTH ASSOCIATION, Conjoint Meeting, Edmonton, Alta. (Dr. William Mosley, Honorary Secretary, 150 College Street, Toronto 5, Ont.) September 6-8, 1955.

UNITED STATES

AMERICAN RADIUM SOCIETY, Annual Meeting, Shoreham Hotel, Washington, D.C. (Dr. R. E. Tricke, Secretary, Mayo Clinic, Rochester, Minn.) April 21-23, 1955.

INTER-AMERICAN CONGRESS OF RADIOLOGY, Shoreham Hotel, Washington, D.C. (Dr. E. P. Pendergrass, Secretary-General, 3400 Spruce Street, Philadelphia 4, Pa.) April 24-29, 1955.

AMERICAN COLLEGE OF PHYSICIANS, Philadelphia, Pa. (Mr. E. R. Loveland, Executive Secretary, 4200 Pine Street, Philadelphia 4, Pa.) April 25-29, 1955.

AMERICAN GOITER ASSOCIATION, 1955 MEETING, Skirvin Hotel, Oklahoma City, Oklahoma. (Dr. J. C. McClintock, Secretary.) April 28-30, 1955.

AMERICAN PSYCHOSOMATIC SOCIETY, Annual Meeting, Atlantic City, N.J. May 4-5, 1955.

AMERICAN UROLOGICAL ASSOCIATION, Biltmore Hotel, Los Angeles, California. (Dr. C. H. de T. Shivers, Secretary, 121 S. Illinois Ave., Atlantic City, N.J.) May 16-19, 1955.

EIGHTH ANNUAL INDUSTRIAL MICROBIOLOGY INSTITUTE, West Lafayette, Indiana. (Dr. C. L. Porter, Director of the Institute, Department of Biological Sciences, Purdue University, West Lafayette, Indiana.) June 5-11, 1955.

AMERICAN MEDICAL ASSOCIATION, 1955 Annual Meeting, Atlantic City, N.J. (Dr. George F. Lull, Secretary, 535 North Dearborn Street, Chicago 10, Ill.) June 6-10, 1955.

ANNUAL ASSEMBLY IN OTOLARYNGOLOGY, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12, Illinois. (Dr. F. L. Lederer, Professor and Head of the Department.) September 19-October 1, 1955.

ANNUAL MEETING OF THE AMERICAN ACADEMY FOR CEREBRAL PALSY, Memphis, Tennessee. (Dr. R. A. Knight, Secretary-Treasurer, 869 Madison Avenue, Memphis 3, Tenn.) October 10-12, 1955.

OTHER COUNTRIES

WORLD HEALTH ORGANIZATION—8th General Assembly, Mexico City. (World Health Organization, Palais des Nations, Geneva, Switzerland.) May 10, 1955.

FIFTEENTH CONGRESS OF FRENCH-SPEAKING PÆDIATRICIANS, Marseilles, France. (Dr. René Bernard, Clinique Médicale Infantile, Hôpital de la Conception, Marseilles.) May 23-25, 1955.

INTERNATIONAL COLLEGE OF SURGEONS—20th Anniversary Meeting, Geneva, Switzerland. (Dr. Max Thorek, 850 West Irving Park Road, Chicago 13, Ill.) May 23-26, 1955.

SEVENTH INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY, Lausanne, Switzerland. (Prof. Hauduroy, 19 avenue César-Roux, Lausanne.) May 26-31, 1955.

INTERNATIONAL HOSPITAL CONGRESS, Lucerne, Switzerland. (Capt. J. E. Stone, Hon. Secretary, International Hospital Federation, 10 Old Jewry, London, E.C.2, England.) May 29-June 3, 1955.

EUROPEAN CONGRESS ON RHEUMATISM, Scheveningen, The Hague, Netherlands. (Dr. H. van Swaay, Secretary, Pieter Bothstraat 12, The Hague, Netherlands.) June 13-17, 1955.

FIFTH CONGRESS OF THE INTERNATIONAL ASSOCIATION FOR THE STUDY OF THE BRONCHI, Stockholm, Sweden. (Dr. J. M. Lemoine, 187 boulevard Saint-Germain, Paris 7e.) June 18-19, 1955.

FOURTH COMMONWEALTH HEALTH AND TUBERCULOSIS CONFERENCE, Royal Festival Hall, London, England. (Secretary-General, National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, London, W.C.1, England.) June 21-25, 1955.

JOURNÉES MÉDICALES DE FRANCE ET DE L'UNION FRANÇAIS, Strasbourg, France. (Dr. L. Michelet, 12, rue Pierre-Geoffroy, Colombes (Seine).) June 1955.

2E RÉUNION SYNDICALE INTERNATIONALE DES GYNÉCOLOGUES ET OBSTÉTRICIENS, l'Hôtel des Syndicats Médicaux, Paris, France. (Dr. Jacques Courtois, 1, rue Racine, Saint Germain-en-Laye, Seine-et-Oise.) June 27-28, 1955.

SECOND CONGRESS OF THE INTERNATIONAL DIABETES FEDERATION, Cambridge, England. (Organizing Secretary, Mr. J. G. L. Jackson, Congress Office, 152 Harley Street, London, W. 1, England.) July 4-8, 1955.

CONGRESS OF INTERNATIONAL ASSOCIATION OF APPLIED PSYCHOLOGY, London, England. (Dr. C. B. Frisby, President, National Institute of Industrial Psychology, 14 Welbeck Street, London, England.) July 18-23, 1955.

SIXTEENTH CONGRESS OF THE INTERNATIONAL SOCIETY OF SURGERY, Copenhagen, Denmark. (Dr. Hasner, 7 Blegdamsvej, Copenhagen.) July 24-31, 1955.

SIXTH INTERNATIONAL ANATOMICAL CONGRESS, Paris, France. (Prof. Gaston Cordier, Secretary-General, 45 rue des Saints-Pères, Paris 6e, France.) July 25-30, 1955.

FOURTEENTH BRITISH CONGRESS OF OBSTETRICS AND GYNÆCOLOGY, Oxford, England. (The Secretary, 14th British Congress of Obst. and Gyn., Maternity Dept., Radcliffe Infirmary, Oxford.) July 27-30, 1955.

THIRD INTERNATIONAL CONGRESS OF BIOCHEMISTRY, Brussels, Belgium. (Prof. C. Liébecq, Secretary-General, 17 Place Delcours, Liège, Belgium.) August 1-6, 1955.

NEWS ITEMS

SASKATCHEWAN

On February 2 the name of Valens Lake was adopted by the Canadian Board on Geographical Names, Ottawa, as an official Canadian map and place name. This name will be published on all future Tazin Lake maps and will commemorate for all time the wonderful work and contributions made by Dr. J. A. Valens of Saskatoon to the practice of medicine in the Province of Saskatchewan.

The members of the North Eastern District Medical Society are to be congratulated on the production of the *North Eastern Medical Journal*. Under date of February 23, the first number of Volume I has just been received. It is a very fine effort, and was thoroughly enjoyed.

In a news item the *Regina Leader Post* indicated that the ratepayers in the Rural Municipality of Nipawin may be without their Municipal Medical Services Plan unless payment of tax arrears is made in the near future. A report indicated that the cash position as of December 31, 1954, was about as usual, but the general tax situation was bad.

To point out the result of this situation, particular reference was made to the Municipal Medical Services Scheme. This Scheme entails an expenditure of \$15,000 annually, and only 67% of the current taxes required to pay for the medical plan has so far been collected. An appeal was made to all taxpayers whose taxes were in arrears to make a payment on account sufficient at least to pay for medical services.

A province-wide increase in the incidence of infectious hepatitis was confirmed recently by Saskatchewan's director of Regional Health Services. Dr. George Kinneard reported that cases of the disease had more than doubled throughout the province during 1954, compared to the previous year. On the basis of reports to the end of February the total for this year showed a continuing climb. In January of this year 55 cases were reported. The total number of cases for February was 76.

Dr. F. S. Lawson, formerly Superintendent of the Saskatchewan Hospital, North Battleford, has succeeded Dr. D. G. McKerracher as Director of Psychiatric Services in the Saskatchewan Department of Public Health.

Expenditure of the Saskatchewan Hospital Services Plan for 1954 amounted to \$17,536,285, including \$33,914 which represented retroactive payments to hospitals for 1953 operations. After making allowance for these payments, the 1954 costs exceeded those of 1953 by \$811,391. This increase was due mainly to higher hospital rates of payments attributed to higher salaries paid to hospital employees.

Approximately half the total cost of the plan for 1954 was met by collections from the hospitalization tax. The remainder was paid from the general funds of the province. Since 1950, the payments from the province's general funds have included a one-third share of the proceeds from the 3% education and hospitalization tax.

The average cost per head of covered population for the 1954 hospitalization expense and administration expense was \$20.42 and 86 cents, respectively. For 1953, the per capita costs were \$19.69 for hospitalization and 75 cents for administration. The higher administration expense for 1954 is attributed mainly to the increase in commissions paid to municipalities for collecting the

hospitalization tax, which was a direct result of the higher tax rates applicable to 1954. The average amount per case paid by the plan for hospitalization of adults and children in 1954 was \$97.89 compared to \$93.37 for 1953. The plan's average payment for newborn care decreased from \$17.70 in 1953 to \$16.81 in 1954.

The S.H.S.P. in 1954, as in previous years, provided payment for over 90% of the estimated provincial total. About one hospital account was incurred for every five persons. Hospitalization rates were 204 cases and 2,084 patient days per 1,000 persons during 1954.

Over 96% of all Saskatchewan's births occur in hospitals, most of which are covered by the plan, according to a report. Maternity care heads the list of reasons for hospitalization among the plan's beneficiaries. Accidents, poisoning and violence were second, and acute laryngitis and tonsillitis third.

Patients admitted for surgical operations comprised just under one-third of all hospital cases. Tonsillectomies and adenoidectomies headed the list of the surgical operations most frequently performed, with appendectomy in second place. Among the remainder of the ten most frequently performed types of surgery were tooth extractions, dilatation and curettage, cholecystectomies, local excisions of skin, and hysterectomies, reduction of fractures and hernia repair. G. W. PEACOCK

MANITOBA

More than 300 interlake residents of Manitoba gave a birthday party at Teulon town hall for Dr. John Murray Goodwin on his 60th birthday. But for recent snows and blocked roads, twice as many people might have been present. For 28 years Dr. Goodwin has served the people of the Teulon, Arborg, Gunton, Fisher Branch and Inwood areas. Dr. W. F. Abbott, on behalf of the Faculty of Medicine of Manitoba University, paid tribute to Dr. Goodwin as one of the best physicians in his field in the province. With Dr. Goodwin were his two daughters, his son, and his aunt who, with her husband the late Dr. Robert Goodwin of Elkhorn, inspired him to study medicine. Easy chairs and a purse were presented to the beloved physician who in his 28 years has used 10 cars, motored 635,000 miles and delivered 2,500 babies.

Dr. Arnold G. Rogers is associated with the Mall Medical Group of Winnipeg in the practice of internal medicine and gastroenterology.

Dr. Dan R. Bigelow has opened an office in the Medical Arts Building, Winnipeg, for the practice of orthopaedic and traumatic surgery. ROSS MITCHELL

ONTARIO

Dr. M. Elizabeth Forbes has been appointed radiologist in the Women's College Hospital, Toronto. A graduate of the University of Western Ontario, Dr. Forbes did eight years' general practice before undertaking postgraduate work at Cleveland Clinic and at Strong Memorial Hospital with Dr. George Ramsey, professor of radiology, University of Rochester, N.Y.

Dr. W. E. Gallie has been made an Honorary Fellow of the Royal College of Surgeons of Edinburgh, and has been invited to act as professor of surgery at Edinburgh for a week in June. LILLIAN A. CHASE

QUEBEC

The Provincial Government has announced that it will turn the present Ste. Justine Hospital in Montreal, which it bought some time ago, into a cancer centre. Work on this conversion will start as soon as the Ste. Justine has moved to the new building on St. Catherine Road. The hospital, which now has 500 beds for children, will be available to cancer patients throughout the Province. In addition, adequate facilities for research will be provided.

Cancer research is carried on intensively in many places in the Province. The proposed cancer hospital will be an invaluable addition to our equipment. It will bring together a staff of experts with the most modern facilities to work with a single purpose of finding a control or cure for this scourge.

Dr. Edward H. Ryneerson, chairman of the Sections of Endocrinology and Metabolism, Mayo Clinic, spoke to the Montreal Medico-Chirurgical Society on February 4 on true hyperinsulinism. He particularly emphasized the difference between true hyperinsulinism and functional hypoglycæmia. The latter condition simply represents a disturbance in carbohydrate metabolism as part of the patient's general condition rather than the cause of the patient's trouble. This distinction is most important because surgery will help none of these patients, whereas those with true hyperinsulinism can expect a full cure.

Since 1927, when the first report of a tumour of the islets of Langerhans appeared, 91 patients with true hyperinsulinism have undergone surgical exploration at the Mayo Clinic. Tumours were found in 76 and may readily have been present in the remaining 15 patients in whom the surgeon was simply unable to demonstrate a tumour.

Last month it was the turn of Queen Mary Veterans' Hospital to present the Society's clinical evening. As has been the custom and we have come to expect, it was again a success professionally and socially. We missed our genial Dr. Cam Gardner, Chief of Surgery at this hospital, who had been called to the bedside of his brother who has since died. We join his many friends in extending our sympathy.

The Quebec Society of Anæsthesia held a one-day meeting in Montreal on February 12. The main speakers on the scientific programme were Doctors C. Gardner, C. Hébert, M. Bélisle and W. Mason Couper, who discussed essential qualities of an anæsthetist, specific anæsthesia, acid-base balance, and complications, respectively. This meeting was followed by a social evening, a thoroughly enjoyable day.

Dr. G. B. Reed, who retired last year as head of the department of bacteriology at Queen's University, died in Montreal on February 21 after a stroke suffered the previous week. He was chairman of the Dominion Fisheries Research Board and a member of the Defence Research Board. His outstanding researches on tuberculosis, gas gangrene and rinderpest, for which he was appointed to the O.B.E. in 1942 and received the U.S. Medal with Palm in 1947, are known to many.

The hospital expansions in Montreal are still progressing energetically. The exterior of the new Montreal General has been completed for some time and the interior finishing work is well under way. Work on the new east wing of the present Western Division of the General, which is to become the Montreal Children's Hospital, is also well advanced.

At the Royal Victoria several departments will move this month into the hospital's new 6-storey east court. This will allow the staff to vacate much of the central block of the main building, permitting reconstruction of

this part of the hospital. The new 7½-storey, 274-bed wing will be opened in September. Work will then start on the final plans, the reconstruction of the 60-year-old east and west wings.

Dr. Ronald V. Christie, professor of medicine in the University of London and vice-president of St. Bartholomew's Hospital, London, England, has been appointed physician-in-chief of the Royal Victoria Hospital, Montreal, and professor of medicine and chairman of the department of medicine at McGill University. This appointment will take effect on October 1 next. Dr. Christie will succeed both Dr. Walter de M. Scriven and Dr. J. S. L. Browne. Dr. Scriven has requested that he be relieved of his appointment as physician-in-chief in order that he may have more time to devote to private practice. Dr. Browne has been appointed professor of investigative medicine and chairman of the new department of investigative medicine set up by the university.

Dr. Christie is already well-known in Montreal, in university and hospital circles. He came to Montreal in 1928, serving as senior resident in medicine in the Royal Victoria Hospital under the direction of Dr. J. C. Meakins. He had had his early medical training at Edinburgh. While here, Dr. Christie won the Travers Allan scholarship and went to the University of Freiburg for studies in pathology. He returned to Montreal as research associate in the McGill University Clinic of the Royal Victoria Hospital, working with Professor Meakins in clinical investigation, teaching and research. In 1933 he was awarded the M.Sc. degree by McGill.

His fame as a physician and researcher won him an appointment at the London Hospital. He was awarded a doctorate in medicine at Edinburgh with gold medal in 1937. The following year he was named to the chair of medicine at St. Bartholomew's.

Dr. Wilfrid LeBlond attended the First World Congress on Prevention of Industrial Sickness and Accidents in Rome, Italy, April 2-6. Dr. LeBlond was the delegate from Laval University, Quebec. A. H. NEUFELD

NEW BRUNSWICK

Busy doctors everywhere are apparently never too busy to assume community responsibilities. In Saint John, Dr. G. B. Peat, mayor of the city, has been re-appointed to the Commission of the General Hospital; and Dr. A. L. Donovan, Chief of Medicine in the General Hospital, has been appointed to the Board of Commissioners of the Saint John Tuberculosis Hospital.

Dr. Thomas Primrose, Associate Professor of Obstetrics and Gynaecology of McGill University, spoke on "pregnancy wastage" to a joint meeting of the Kings County, York-Sunbury, St. Croix and Saint John Medical Societies in the auditorium of the Pathological Building at the Saint John General Hospital on February 17. On the following day he addressed a second meeting, discussing steroid chemistry as it applies to obstetrics. Both papers received keen attention, and the visit of Dr. Primrose was much enjoyed by the whole medical community.

The February meeting of the Moncton Medical Society was a business meeting discussing: (1) The future of prepaid medical care in New Brunswick. This was stimulated by a report of the visit of Dr. F. W. Jackson and Mr. C. L. Francis of Ottawa to the Fredericton Society, which acts for the profession in N.B. in matters of economics. (2) Service-type plans for national employees, with a review of the reaction of Ford Motors employees in relation to Trans Canada Medical Plans and Maritime Blue Shield. (3) Current action on welfare groups. Dr. F. L. Whitehead opened discussion

on the above subjects. (4) A revised programme for cancer control in New Brunswick.

The Minister of Health of New Brunswick, the Hon. J. F. McNerney, M.D., with Dr. J. A. Melanson and Dr. A. M. Clarke, attended a meeting of the Atlantic Province Ministers with the Minister of National Health and Welfare, the Hon. Paul Martin, on January 17. Following this meeting, Dr. Melanson, Chief Medical Officer of N.B., met with the Provincial Deputy Ministers under the chairmanship of Dr. R. D. Defries, director of the Connaught Medical Research Laboratories, to discuss the latest developments in poliomyelitis vaccination plans.

The Saint John Medical Society announced that their annual spring clinical session will be held from April 20 to 22 inclusive. Dr. Campbell A. Gardner of Queen Mary Veterans' Hospital, Montreal, and Dr. Earl E. Ewart, urologist at the Lahey Clinic, Boston, will be guest speakers.

The New Brunswick Department of Health and Social Services has begun a project to stimulate interest in prenatal Rh blood examinations under the director of Maternal and Child Health, Dr. J. R. Mayers. In co-operation with the N.B. Medical Society, copies of all Rh-negative blood examination reports from the Provincial Laboratory will be sent to the director of the abovenamed branch who will arrange with Dr. Arnold Branch, director of the Red Cross Blood Transfusion Service, to provide blood at the designated hospital at the proper time in case transfusion is required.

The Chief Welfare Officer of the New Brunswick Department of Health, Dr. David A. Stewart, has outlined a plan for an experimental welfare bureau at Woodstock utilizing the services of the Children's Aid Society, pension inspectors, public health nurses, the district health officer, and representatives of the Maternal and Child Health Division.

A. S. KIRKLAND

NOVA SCOTIA

A Federal health grant of \$26,211 will help Nova Scotia to extend its poliomyelitis treatment facilities. Modern equipment is being added to the clinic at the Victoria General Hospital, Halifax, which has been the main centre for the treatment of poliomyelitis in Nova Scotia. However, difficulty in transporting cases to Halifax from distant points has been frequently encountered. Consequently, the current extension programme calls for the organization of treatment centres at the City of Sydney Hospital in Cape Breton, at one end of the Province, and at the Yarmouth Hospital at the other. Another poliomyelitis clinic, at St. Martha's Hospital, Antigonish, will also receive aid. This clinic, located half way between Sydney and Halifax, has been in operation since 1952.

On the afternoon of January 22, Halifax broadcasting stations notified all naval personnel who had participated in drinking an "alcoholic" mixture on board H.M.C.S. *Magnificent* the night before to report to R.C.N. Hospital, H.M.C.S. *Stadacona*. At the same time the hospital had already gone into "high gear" to admit and start treatment on the 48 cases that came by stretcher and on foot. The few who were able to watch the organization and teamwork of doctors, nurses, technicians, dietitians and medical assistants were amazed at the rapidity of the "round the clock" treatment administered to the dangerously ill and all other sick personnel.

Great credit is due Surg. Capt. F. G. W. MacHattie, Command Medical Officer, Atlantic Coast, for the organization; to Dr. D. J. Tonning, civilian consultant,

for invaluable direction on treatment; and to Surg.-Cdr. R. A. G. Lane and his staff on H.M.C.S. *Magnificent* for early recognition of the mishap.

A great deal of valuable medical data were recorded for the literature in following these 48 cases.

Dr. E. F. Ross, Assistant Professor of Surgery, Dalhousie University, has been elected a member of the Board of Governors of the American College of Surgeons as a representative of the Royal College of Surgeons of Canada. The appointment is for a period of three years.

Dalhousie University graduates presently studying at the Mayo Clinic, Rochester, Minn., are James Vibert, '51; Hugh and Mary MacDonald, '53; John Godden, '51; E. A. Moffitt, '51; and Angus Neary, '48.

The Dalhousie Post Graduate Committee presented their annual week in medicine February 28 to March 4. The visiting speaker this year was Dr. Maurice S. Segal, Clinical Professor of Medicine, Tufts College Medical School, Boston. Besides taking part in several round-table discussions Dr. Segal gave papers on the prevention of postoperative complications by application of physiological principles; bronchial asthma and emphysema; and principles of inhalation therapy.

Dr. Norman H. Gosse, Chairman of Council, Canadian Medical Association, and Mrs. Gosse (Dr. Margaret Gosse) recently attended meetings of the American College of Surgeons in Lima, Peru. Other countries visited where meetings were held were Cuba and Jamaica. The visiting surgeons sailed from New York on the Cunard liner *Mauretania* on December 29 and returned to the same port January 28. Rumour has it some were more interested in the "Lost City of the Incas" than in the scientific sessions at Lima!

Dr. Helen Hunter, Dalhousie '49, who was the first woman intern at the Victoria General Hospital, Halifax, is specializing in the practice of paediatrics.

The Department of Psychiatry, Dalhousie University, presented a two-day session in that specialty on January 31 and February 1 at the Victoria General Hospital.

Dr. J. Gordon Kaplan, Associate Professor of Physiology, Dalhousie University, presented a paper in December at a conference of the American Association for the Advancement of Science held in Berkeley, California. A great deal of international interest was shown in Dr. Kaplan's research on intracellular enzymes.

C. M. HARLOW

NEWS OF THE MEDICAL SERVICES

The 26th Annual Meeting of the Aero Medical Association held in Washington, D.C., March 21 to 23, 1955, was attended by Air Commodore A. A. G. Corbet, Director General Medical Services (Air); Group Captain G. D. Caldbick, Deputy Director General Medical Services (Air); Group Captain D. G. M. Nelson, Commanding Officer, Institute of Aviation Medicine; and other R.C.A.F. representatives. Two papers were presented at the meeting by R.C.A.F. medical officers, and a scientific exhibit was arranged by the Institute of Aviation Medicine.

Three R.C.A.F. medical officers were candidates in the first examination conducted by the American Board of Preventive Medicine for the certification of specialists in Aviation Medicine. The examinations were held March 17-19, 1955, just before the 26th Annual Meeting of the Aero Medical Association in Washington, D.C.

BOOK REVIEWS

CANADIAN MEDICAL DIRECTORY 1955

Edited by W. R. Feasby. 1st ed. 384 pp. \$7.00. Current Publications Ltd., 9 Duke Street, Toronto, 1954.

For many years Canada has not had its own medical directory. The only source of reference for Canadian physicians has been the directory published by the American Medical Association, and this has grown to such a size that annual revision is out of the question. Anyone who can ensure annual publication of a directory of Canadian physicians is therefore doing a public service. Even at that, a fair proportion of Canadian physicians are so mobile that no publication will ever keep up with their migrations.

We welcome the first edition of the *Canadian Medical Directory*, and congratulate Dr. Feasby and his publishers on the results they have achieved in this formidable undertaking. The Directory classifies physicians alphabetically and geographically, and includes a general information section with data on such subjects as health departments, armed forces, universities, and hospitals.

The publishers promise us an annual volume. The quality of the volumes will depend, of course, almost entirely on the conscientiousness with which physicians fill in the questionnaires addressed to them each year.

HISTORICAL REVIEW OF BRITISH
OBSTETRICS AND GYNÆCOLOGY
1800-1950

Edited by J. M. Munro Kerr, R. W. Johnstone, M. H. Phillips. 419 pp. \$5.00. E. & S. Livingstone Ltd., Edinburgh and London; The Macmillan Company of Canada, Ltd., Toronto, 1954.

This volume was prepared as a gift to the Royal College of Obstetricians and Gynaecologists on the occasion of its semi-jubilee in 1954, and takes up the story of obstetrics in Britain in 1800 where H. R. Spencer left it off in his "History of British Midwifery 1650-1800."

The history is grouped into two main sections, one a review of the whole field of obstetrics by fifty-year periods, 1800-1850, 1850-1900 and 1900-1950, and the other a review of special subjects such as antenatal care, obstetric anaesthesia and maternal mortality. The last fifty pages outline the rise of gynaecology in Britain. On the whole, the accounts of special subjects are the more interesting part of the book. It is difficult to single out sections for praise, but we were specially interested in Leonard Colebrook's account of the history of the battle against puerperal infection, the excellent history by A. M. Claye of obstetric anaesthesia and analgesia, and the very full discussion by Sir William Gilliat of maternal mortality, stillbirth and neonatal mortality. Clearly no historian of medicine will be able to do without this volume, which is well produced and full of little details not easily found elsewhere.

THE STORY OF MEDICINE

A. L. Murphy. 243 pp. illust. \$3.50. The Ryerson Press, Toronto, 1954.

This little book gives a very rapid and entertaining review of the highlights of medical history. Its author is a good story teller and makes his tale palatable with anecdotes and epigrams. The book is suitable for non-medical readers or junior students of medicine wishing to make an easy acquaintance with some of the historical characters of their profession.

BRITISH SURGICAL PRACTICE

Surgical Progress 1954. Under the General Editorship of Sir E. R. Carling, Consulting Surgeon, Westminster Hospital, and Sir J. P. Ross, Surgeon and Director of Surgical Clinical Unit, St. Bartholomew's Hospital, London. 348 pp. illust. \$10.00. Butterworth & Co., Ltd., London and Toronto, 1954.

As in former years, this annual supplement to *British Surgical Practice* consists of three parts: original articles, critical surveys and abstracts. Of the nine original articles, the neurosurgical one on surgical treatment of involuntary movements is contributed by Dr. Feindel of the Montreal Neurological Institute, and gives an excellent account of the present state of affairs in this field. Articles of interest to the general surgeon include one on injuries and strictures of the bile-ducts, in which Mr. Maingot claims good results in over 50% of cases operated on; a survey of treatment of urethral and bladder injuries; a plea by Sir Stanford Cade for greater use of pelvic viscerectomy in advanced cancer; and a long discussion of poliomyelitis from the surgical standpoint. The last named article gives an account of the Copenhagen technique of positive pressure ventilation in cases of respiratory difficulty. The critical surveys cover antibiotics, blood transfusion, carcinoma of the oesophagus, carcinoma of the stomach and surgery in Korea. The survey of oesophageal cancer is contributed by Dr. Ross Robertson of Vancouver, who in addition to a description of his own technique gives a fair account of other methods.

The abstracting section is perhaps the least significant; the journals covered are the better known Anglo-Saxon ones, nothing like the extensive coverage of *International Abstracts of Surgery* being attempted. The merit of this book lies in the excellent original articles and critical surveys.

THE DIAGNOSIS AND TREATMENT OF
CONVULSIVE DISORDERS IN CHILDREN

S. Livingston, Assistant Professor in Paediatrics, The Johns Hopkins University School of Medicine; Physician-in-Charge, The Johns Hopkins Hospital Epilepsy Clinic. 314 pp. illust. \$10.50. Charles C Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1954.

This is a forthright and practical book based on the author's wide experience with the investigation and treatment of epilepsy at the Harriet Lane Home of the Johns Hopkins Hospital, over the past seventeen years. The subject is presented in up-to-date detail, with clearly defined paragraph headings and subdivisions, and many tables which summarize important facts in the text. Many brief case histories are included, and there are sections on roentgenography and electroencephalography; Dr. F. F. Schwenker has added a brief but valuable chapter on "Social Management," and Dr. A. E. Walker, a chapter on "Surgical Treatment."

The author divides epilepsy into two large groups, "cryptogenic" and "secondary" epilepsy—with, of course, many clinical subdivisions. Chapter 5 on "Disorders Simulating Epilepsy" (including breath-holding spells, febrile convulsions, and hypoglycaemia) should be of particular value to paediatricians.

In the section on treatment, all of the antiepileptic drugs now in use are discussed fully, with a frank appraisal based on the author's experience. It is of interest that he still finds a definite place for ketogenic dietary treatment in certain types of epilepsy. The book is on the whole well illustrated, though some x-ray photographs are poorly reproduced.

There is no doubt that this will prove a valuable and dependable guide to the physician, child specialist and neurologist; it is highly recommended.

SALMONELLÆ AND SHIGELLÆ

A. J. Weil, *Department of Bacteriology, The Bronx Hospital, New York*; and I. Saphra, *Department of Bacteriology, The Beth Israel Hospital, New York, N.Y.* 247 pp. \$8.50. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, Ont., 1953.

The authors' aim as stated in the preface is to make conveniently accessible the information needed for handling of the laboratory aspects of *Salmonella* and *Shigella* infections. They rightly state that the merely technical aspects are not sufficient for the most useful collaboration between the laboratory and the clinicians and that an understanding of the biology of the microorganisms and of the disease processes caused by them is essential.

The book is divided accordingly into sections concerned with the biological and immunological properties of the microorganisms, methods of isolation and identification and the clinical and epidemiological features of salmonellosis and shigellosis.

It is unfortunate but probably inevitable in a book on this particular subject that the authors' aim is only partly fulfilled. Some sections are well presented and covered; others like the taxonomy of the *Shigellæ* are confusing and also outdated since the recent decision of the International Enterobacteriaceæ Subcommittee. The practically important "borderline organisms" are very sketchily dealt with and few workers will agree with the authors' restricted point of view on these organisms.

The chapters on methods and techniques should be very useful to all those confronted with the setting up of laboratory routines for the isolation of enteric pathogens. The steps are clearly outlined and due emphasis is given to the importance of specimen collection. The illustrations are excellent with the exception of the two coloured plates which are not truly representative.

In spite of certain shortcomings, the book can be recommended to all concerned with clinical laboratory work as it contains a great deal of valuable information on the various aspects of these widespread disease processes.

MODERN TRENDS IN DIAGNOSTIC RADIOLOGY

(Second Series). Edited by J. W. McLaren, Radiologist, X-ray Department, St. Thomas's Hospital, London. 413 pp. illust. \$14.00. Butterworth & Co. (Canada) Ltd., Toronto 6, 1953.

The second series of "Modern Trends in Diagnostic Radiology" supplements the first, published five years ago. In these two volumes McLaren succeeds in presenting a comprehensive coverage of the very considerable field of diagnostic radiology and the recent advances made therein.

As in the first series, the articles in the volume now under review have been contributed by authors of various nationalities. Of the 24 chapters, 14 are presented by Scandinavian authors, nine originated in England, and one in Canada.

Interesting new designs in apparatus and in technical devices are well described; for example, the image amplification and equipment used for rapidly repeated exposures in cardioangiography. Actual techniques for the examination of the cardiovascular system, and in the use of lumbar aortography for investigation of vascularization of the kidneys in obscure lesions, are well presented, the latter procedure covering both direct (percutaneous) aortography as well as the retrograde method of puncture or exposure of the femoral artery.

Indications for, and the advantages of, various technical procedures in encephalography, cerebral angiography, and myelography are well covered.

Two chapters were of special interest to the reviewer—"Radiology in Acute Abdominal Disease," and "Hyster-

ography in Cancer of the Uterus." These include excellent summarizations of other books by the contributing authors and are of great practical interest and value.

The chapters on the value of arthrography in knee injuries and on lung manifestations in fungus diseases are commendable. The legal aspects of the practice of radiology are authoritatively dealt with also.

This book is warmly recommended to all radiologists—particularly to those who have not the time necessary for study of the abundant literature which has been presented in recent years but who must, nevertheless, keep abreast of the recent advances in their special field.

BREAKING PATTERNS OF DEFEAT

R. L. Jenkins, Chief of Psychiatric Research, Psychiatry and Neurology Service, Veterans' Administration, Washington, D.C. 270 pp. illust. \$6.75. J. B. Lippincott Company, Montreal, 1954.

This in the author's words is a contribution "to a broad basic, common and human orientation" for those entering the field of human personality.

A delicious fable-prologue is followed by a description of different patterns of human reactions and these are illustrated by clinical cases. Masculine and feminine adjustment, family relationships, parenthood, and old age are all discussed. The elements of psychotherapy are discussed clearly and concisely. Finally, the relationship between dynamic psychiatry and other psychological theories is considered.

Thirteen diagrams and a minimal use of psychiatric terms make this book suitable for beginners. Philosophical considerations are constantly kept at a practical level and so serve to broaden the outlook of the reader. The purpose, possibilities and difficulties of psychotherapy are systematically explained, omitting the technical details.

The author's outlook is an eclectic one. He evaluates problems in terms of interpersonal relationships and pays due tribute to cultural factors, but does not forget Freud and his disciples. He is tolerant and understanding of the various schools of psychiatry and manages to integrate many of their elements into a useful whole. He, however, does not pretend that all contradictions can be resolved, though he discusses how difficulties can be minimized.

It is clear from this book that the author, who is chief of Psychiatric Research, Psychiatry and Neurology Service of the V.A., Washington, is widely experienced in psychiatric technique and the use of auxiliary services in a clinic setting. However, he does not deal with the problem of how to weld these different disciplines into a team and a chapter dealing with this would be welcome in later editions.

This is a good book for those in mental health clinics. It also should be useful reading for physicians who are concerned with the emotional problems of their patients, for magistrates, welfare workers and interested laymen.

KLEINES DIAGNOSTIKON

(Diagnostic Pocketbook). M. Barschneider. 9th-10th ed. 254 pp. 12.50 Marks. Ferdinand Hirt, Kiel, West Germany, 1954.

This pocketbook of differential diagnosis is designed for the general practitioner who reads German. It was first published in West Germany in 1951 and has had a wide sale as a quick reference work. The main function of such a book, which the present work seems to fulfil, is to ensure that diagnoses are not missed because the condition in question just is not thought of; it also helps to indicate methods of confirming a suspected diagnosis.

THE EPILEPSIES: ELECTRO-CLINICAL
CORRELATIONS

H. Gastaut, Professor in the Faculty of Medicine of Marseilles. 149 pp. illust. \$5.25. Charles C Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1954.

This small volume of 149 pages appears as a monograph in the American Lecture Series. The author is a Professor in the Faculty of Medicine at Marseilles, and well-known in this country for his experimental and clinical studies in epilepsy in recent years.

The greater part of the book is taken up with a clinical and physiological analysis of epileptic symptoms, and summarizes admirably the author's original contributions to the subject. There are also sections on diagnosis and treatment of epilepsy. This will be of great interest to all students of epilepsy who possess a background of knowledge of electroencephalography, for much of the material is appearing in English for the first time. Professor Gastaut's brilliant work is of great importance, and is likely to influence our thinking about epilepsy for some time to come.

The book has been beautifully translated by Dr. Mary Brazier of Boston, and is dedicated to Dr. Wilder Penfield, who contributes a brief preface. It is unfortunate that no references are given, as they would increase the value of this work.

MAXILLOFACIAL ANATOMY

With Practical Applications. H. H. Shapiro, Assistant Professor of Anatomy, College of Physicians and Surgeons, Columbia University. 392 pp. illust. \$12.00. J. B. Lippincott Company, Montreal, 1954.

The preface informs us that "this book is specifically designed to suit the particular needs of students and practitioners of dentistry and medicine for practical information on the morphologic, functional and roentgenologic anatomy of the face, the jaws and the associated structures of the head and neck." The reader is expected to possess some knowledge of anatomy, for even on the first page of the book he will meet such terms as *primordia*, *ectodermal tube*, and *cephalic* which appear without definition or introduction.

The titles of the thirteen chapters into which the book is divided indicate its comprehensive scope. They are: Early Development, Skeletal Framework, Roentgen Anatomy, The Face, Air Channels and Paranasal Sinuses, Oral Cavity and Pharynx, Glands, Musculature, Temporomandibular Joint, Vascular Supply and Drainage, Neuro-anatomic Considerations, Anatomic Considerations in Wounds of the Face, and Cephalographic Determinations in Maxillofacial Asymmetry.

The numerous illustrations form a very important part of the book. They are clear, well chosen and large—in many instances a single illustration fills a page. They are mainly reproductions from other works on anatomy and from various publications by the author. They illustrate not only embryology and gross anatomy but also operative and technical procedures, deformities, fractures, wounds, plaster casts and radiographs. It is in practical applications and clinical considerations that the book excels. Into these the author has put much of himself and has given valuable advice and welcome instruction.

In a number of instances the English is loose and difficult to decipher. Again, there are certain disconcerting laxities in terminology. To take one example, the ramus of the mandible is so labelled in figure 59, but in the text it is sometimes referred to as the *ramus* and sometimes as the *ascending ramus*. These are matters that can be remedied and tidied when the book is revised. It is pleasing to note that the word *nonvascular* is preferred to the unfortunately popular *avascular*.

NEUROSURGERY OF INFANCY
AND CHILDHOOD

F. D. Ingraham, Associate Professor of Surgery, Harvard Medical School; and D. D. Matson, Assistant Professor of Surgery, Harvard Medical School. 456 pp. illust. \$16.00. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1954.

Leadership in the field of neurosurgery of infancy and childhood has been given over the past few years by the two authors, and it is timely that they should produce such an excellent volume as this. The presentation is logical, starting with congenital anomalies and progressing to hydrocephalus, trauma, tumours, infections, malformations of the cerebrovascular system, epilepsy, and lead encephalopathy. The last chapter is devoted to anaesthesia in the infant and child. The whole volume is well illustrated and the bibliography contains references to the more important articles on the various subjects.

One may ask what place lead poisoning has in a neurosurgical textbook, but when one considers how easy it is to mistake a posterior fossa tumour with increased pressure for a severe lead encephalopathy, the answer becomes obvious. In severe cases the authors recommend an extreme decompression, realizing that the chances of dementia and future seizures are great and, unless drastic measures are taken, the outcome will be bad. The problem of subdural effusion in infants with meningitis is handled clearly and concisely, and this section will be of great interest to paediatricians. If with subdural taps the effusion dries up quickly, no further treatment is necessary. If the effusion becomes chronic, then a surgical approach is necessary.

This volume is recommended not only for neurologists and neurosurgeons, but also for paediatricians who face the problem of deciding what to do for the many neurosurgical conditions of infants and children.

DENTAL AND ORAL X-RAY DIAGNOSIS

A. C. W. Hutchinson, Professor of Dental Surgery, University of Edinburgh. 524 pp. illust. \$12.75. E. & S. Livingstone Ltd., Edinburgh and London; The Macmillan Company of Canada Limited, Toronto 2, 1954.

This excellent textbook should be a welcome addition to the library of diagnostic radiologists and other physicians interested in lesions of the oral cavity, jaws, and facial bones. The subject is approached from the clinical and pathological point of view rather than as an isolated study of dental and oral x-ray diagnosis in its narrower limits. The book will appeal to the clinical radiologist because of its correlation of x-ray findings with clinical manifestations, both local and systemic.

The detail of the reproductions of dental films is excellent in view of their small size. Considerable use has been made of oblique lateral radiographs of the mandible and maxilla. This allows a wide range of illustrations and clarifies the relationship of the teeth in the infant and adolescent to a greater degree than the use of intraoral films only.

Particularly valuable are references to the normal development of deciduous and permanent dentitions. This is useful in determining ages and the study of physiological changes during growth. One paragraph deals entirely with normal variations and lesions of the temporomandibular joints. This difficult phase of radiography is covered in detail and includes descriptions of tomography and arthrography. The reviewer knows of no other text in which the material on this subject is so complete.

A chapter on opacities of the soft tissues is interesting and informative. The section devoted to diseases of the

*14 different symptoms in 14 different patients
pointed to a single diagnosis— depression*

Watts¹ saw varied, ill defined, and apparently
unrelated symptoms—such as the
ones below—in 14 of his patients:

insomnia—
fainting—
pain in chest—
indigestion—
fatigue—
dizzy spells—
cough—
asocial behavior—
fear of being alone—
weeping bouts—
loss of interest in job—
irritability—
chronic invalidism—
heavy drinking.

For each of these patients
he made the same
diagnosis: depression.

Watts found—as countless
other physicians have
discovered—that when
he specifically treated
these patients for depression,
their miscellaneous
psychosomatic complaints vanished.

'Dexedrine Spansule'
capsules assist in
restoring such patients
to normalcy by providing
day-long relief from depression,
renewing interest and optimism
and restoring the capacity
for physical and mental effort.

S.K.F.'s 'Spansule' capsules are the only
sustained release oral preparations accepted by
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1. Brit. M. J. 1:11, 1947.

*Reg. Can. T. M. Off.

523



salivary gland includes excellent reproductions of salivary calculi and sialography.

Almost one quarter of the book is devoted to tumours of the jaws. A complete classification including radiological findings of various new growths, odontogenic malformations and epithelial and mesenchymal tumours is presented. Clinical features are described and concise pathological summaries of each are given.

X-ray changes in the jaw secondary to disturbances of the endocrine systems, nutritional diseases, inflammatory diseases and injuries are included in other chapters to round out a valuable contribution to radiological literature.

BOUQUET FOR THE DOCTOR

D. Fisk. 240 pp. illust. \$3.25. William Heinemann Ltd., London and Toronto; British Book Service (Canada) Ltd., Toronto 6, 1954.

Among the books on the history of medicine designed for the lay public or the junior medical student, Miss Fisk's must take a high place. The author has not attempted to cover the whole field but has chosen some of the more interesting highlights. Thus the development of modern pathology, which does not lend itself to dramatic writing, is omitted while the spectacular rise of bacteriology is described in considerable detail. The book combines the virtues of ease of reading with accuracy. It is to a large extent based on biography, and Miss Fisk is at her best when describing such characters as Harvey and Jenner. The book is recommended as an introduction to the history of medicine.

THE CLINICAL EXAMINATION OF THE NERVOUS SYSTEM

G. H. Monrad-Krohn, Professor of Medicine in the University of Oslo; Physician-in-Chief to the University Clinic for Nervous Diseases, Oslo. 428 pp. illust. 10th ed. 36/- H. K. Lewis & Co., Ltd., London, W.C.1, 1954.

The tenth edition of this classic from the University of Oslo, Norway, has appeared with suitable modifications. For those unfamiliar with the work, first published in 1921, it should be stated that this is in no way a textbook of neurology but a well-documented account of the technique evolved in the author's clinic for the examination of the nervous system. Although the book is over 30 years old, its author is well abreast of the literature, and includes numerous references to recent work. The chief new addition to the book is a section on vertebral angiography. The author writes as lucidly as ever, though it is strange that no-one has ever corrected his very few slips from perfect English, such as the Germanism "consciousness resp. unconsciousness," "predispose for," and "toxoplasmic herds" (for toxoplasmic foci).

THE DIGITAL CIRCULATION

M. Mendlowitz, Associate Attending Physician, Mount Sinai Hospital; Research Fellow, Columbia University Division of Goldwater Memorial Hospital, New York City. 182 pp. illust. \$6.75. Grune & Stratton, Inc., New York, 1954.

The most valuable aspect of this monograph is provided by its 636 references on digital circulation. For this reason alone the book is bound to be useful to those planning or carrying out clinical research in this field. Moreover the author's own work on digital blood-flow, digital vascular resistance, clubbing and other clinical studies, is all presented in one place.

This book will provide little satisfaction, however, to those who are merely curious to learn a little more about digital circulation. In this respect the chapter headings are encouraging; they cover anatomy, physiology, pharmacology, techniques of measurement and disease. Under these headings the relevant literature is referred to extensively, but apart from those sections dealing with Dr. Mendlowitz's own work, the book reads rather like a card index and the available facts are presented uncritically; this makes the book "dry" to read and the general trend of scientific thought in this field becomes obscured by an excess of information. While it is good to know the justification for a statement presented, it seems excessive that on pp. 85 and 86 the same scientific publication should be referred to 17 times.

The accounts of the author's own work show a praiseworthy leaning toward the quantitative expression of clinical data, but the description of his arguments is so confusing that the reader soon loses sight of their real importance. For instance, during a discussion of the application of Poiseuille's Law to digital blood flow there occur no less than six equations of the form:

$$\text{"dynes} = \text{dynes"}$$

Several large books have been written on the nature of the statement $2 + 2 = 4$, but it is doubtful whether even a philosopher could debate the meaning of the statement $A = A$.

Some light relief in an otherwise excessively earnest work is provided by the fact that Fig. 23 is printed upside down, and by some sentences in the discussion of Raynaud's disease. Thus:—"Women are better insulated by fat than man⁴⁸ but are often more susceptible¹⁹ because of the inadequacy of clothing dictated by current fashion, and because the epidermis is often thinner and therefore more permeable to the effect of cold.⁴⁰¹ Also women's hands, in the course of doing housework, are often in greater contact with cold water than are men's.⁴⁰¹ Illness, starvation, and low basal metabolism may be contributory factors in this increased susceptibility.⁴⁰¹ In addition, women are more volatile emotionally than men and this factor is of great importance in producing vasospasm."⁴⁰¹



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